THE
EDINBURGH
NATURAL HISTORY SOCIETY

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EDINBURGH NATURAL HISTORY SOCIETY

1976

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EDITORIAL

Contributions to the 1976 Journal are very varied covering the wide interests of members. A reflection of the warm, dry sunny seasons of 1975 and 1976 is the many notes on and references made to butterflies and other insects.

It has been good that our Honorary President, Mr. P.W.G. Gunn, has attended so many of the meetings and that he was at the Annual General Meeting to thank, on behalf of members, our retiring President, Mrs. E. Farquharson, for guiding the Society so ably and with such graciousness through the last three years and for extending its sphere of influence. We welcome our new President, Mrs. M.R. Watson, who is well-known as a leader of ornithological outdoor meetings. We give her our good wishes for her term of office.

After 17 years of very active secretarial work for the Society, Miss N.F. Henderson has retired from the office of Honorary Secretary. The Society owes her a debt of gratitude for all she has done and members thanked her in a tangible way at the December meeting. She is succeeded as Honorary Secretary by Mrs. C. Stewart whose work for the Society has been so much appreciated.

A feature of the 1976 outings, arranged with forethought and initiative by the Excursion Committee for which we thank them, was the increased number run jointly with other Societies. As a result many valuable contacts were made between members of the ENHS and these Societies whose hospitality we have greatly appreciated. We thank the Director of the Royal Zoological Society of Scotland, lecturers from Universities, Nature Reserve Rangers and all others who have given of their time and knowledge to lead excursions and to lecture.

Through the kindness of Mr. Peter Hitt, Outdoor Education Officer, Lothian Region, the Society now has the use of a large classroom in Old Broughton School where books, journals, equipment and exhibition material can be stored. The building is at present being rewired and once this has been completed the Society hopes to be able to put the room into more positive use for the benefit of its members. Lack of storage space has been a serious handicap in recent years and we are most grateful for this helpful gesture which should enable us to expand our activities in the future.

A list of books in the Society's library was given in the 1975 Journal. Inside the cover of each book members will now see the Society's bookplate depicting the environment of Edinburgh and symbolising the range of the Society's activities, from under water to mountain tops. We thank Miss Helen Jackson for designing it with such imagination, interest and care.

We thank the Honorary Treasurer for so ably looking after our finances; the secretarial helpers; the projectionist; those who contribute to and help at the Sales and Coffee Stalls and the many other members who help in various ways with the smooth running of the meetings. Finally our thanks go to Gordon Finnie and his associates for the interest and care which they show in the printing of the Journal.

During the year resignations have been received from Miss J.A. Allan, Miss F. Butters, Mr. B. Catley, Miss E. Jack, Mr. A.W.G. John, Miss B. Kinloch, Mr. J.A. Lindley, Miss G. Montgomery, Mr. R. Murray, Mr. and Mrs. Raith, Mr. J. Ryder, Mr. and Mrs. Suddaby.

We record with sorrow the death of Miss M. Dare, Mrs. M. Kennedy, Mrs. W. Robertson and Mr. I. Sime (obituary - see backcover).

Mrs. Winifred Robertson, who died this year, had been a member of the Society since August 1958. Her interests were varied, including membership of the Scottish Mountaineering Club (her husband was a founder member), the Royal Scottish Geographical Society and the Scottish Rock Garden Club (she was a keen gardener). For many years Mrs. Robertson was a very active committee member of the Scottish Rights of Way Society. Within the Society she served on Council and several times enthralled us with her lectures. Of her I can quote a friend who said, "She loved Scotland and all that it stands for".

For one thing in particular we should hold her memory dear - it was she who found us our present meeting place, the YWCA Hall.

C.P.R.

WINTER INDOOR MEETINGS 1976

The speaker at the January meeting was Miss Janet Raeburn, one of our own members. Her subject was "Wild Flowers through the Seasons". With slides of very high illustrative and aesthetic quality, many of them taken on Society field excursions, Miss Raeburn took us through the botanical year, from the naturalised Winter Heliotrope found at North Berwick to the colourful berries and fruits of the autumn hedges and copses, mentioning on the way special points of interest, such as rarity, highly evolved pollination mechanisms, distributions affected by soil or intensity of light or the depredation of man and beast.

From the summer season's plethora she selected some examples on the Special List of plants of the new 'Conservation of Wild Creatures and Wild Plants' Act - the Military Orchid and Monkey Orchid, growing on chalk in a few places in southern England, and the Lady's Slipper now only known in one place in Britain. Illustrations followed of flowers characteristic of different habitats, such as the Dwarf Thistle, Clustered Bellflower, Bird's-eye Primrose of chalk or limestone country; the canal-side flowers, such as Meadow Sweet and Valerian; the Bogbean and Amphibious Bistort of Threipmuir Reservoir; the Cottongrass and Sundew of Balerno Common (now the Red Moss Reserve); strand plants, such as Sea Rocket, Lovage, Sea-holly and Yellow Horned-poppy; plants of the Cairngorm area, such as Intermediate Wintergreen, Dwarf Cornel, Scottish Asphodel and Starry Saxifrage and those of the Ben Lawers limestone, such as Mountain Avens, Alpine Cinquefoil, Rock Speedwell and Alpine Gentian.

The February meeting was addressed by Dr. Margaret Bradshaw of Durham University Extra-Mural Department on the subject of Upper Teesdale. This area, said Dr. Bradshaw, positioned about the centre of Britain and rising to about 1700 feet with Fell country beyond, was a botanist's happy hunting-ground. It contained rare plants peculiar to itself and was the southern limit of many northern species as well as having many plants of a southern distribution (for account of ENHS visit to the area in May see page 33). It was a National Nature Reserve but still owned by farmers, and so was subject to the grazing of their beasts, to drainage and erosion and, more increasingly, to visitor pressure.

With the aid of excellent slides, Dr. Bradshaw described the various types of habitat and their flora - the riverside; the woodland; the upper meadows bright with Dandelion, Buttercup, Marsh Marigold, Globeflowers; the broken, turfy pastures at the foot of Widdybank Fell where grow masses of Bird's-eye Primrose and Spring Gentians; the sugar limestone grassland with its Blue Moor-grass, Spring Sandwort and Field Felwort, and the gravel flushes of Cronkley and Widdybank Fells with the unique Teesdale Sandwort, Scottish Asphodel and Mountain Avens - all part of the rich profusion of flora to be found in Upper Teesdale.

At the March meeting, Mr. Emilio Dicerbo of Moffat, through the means of slides and an accompanying taped commentary and sound recordings, gave a comprehensive survey of the birds of the river, hills and moors around Moffat. The town itself, said Mr. Dicerbo, was only about 300 feet above sea-level but its surroundings rose to around 2000 feet and so it was an area where a great variety of birds could be seen.

Mr. Dicerbo had obviously seen all of them and photographed most of them, at the nest or in flight, and recorded their calls and songs. Amongst the many outstanding photographs, one remembers especially those of a Short-eared Owl perched on a road-side post and of a Blackcock's lek, both taken from a parked car, and those of a family of Barn Owls at the nest, inside the loft of an old cottage.

It was a superb presentation of delightful and illuminating material.

Member's Night in April brought a variety of individual efforts before the Society. Mr. Colin Bell, a junior member, showed slides taken on various outings; Miss Rosemary Harper illustrated the trapping of mammals on Corstorphine Hill; Mr. Arthur Smith gave an illustrated account of the habitat of the Wood Wasp, and Mrs. Farquharson a "candid camera" view of the Society on summer excursions. After an interval for coffee, Mr. Ford gave a talk on wild-life seen by him on a visit to Australia.

After the business part of the AGM in October, one of our Council members, Mr. John Winham, spoke about "Antarctica". In a most amusing and informative address, Mr. Winham described his experiences as a member of a Falkland Islands Dependency scientific survey during the period 1959-62. They had sailed from the Falkland Islands across Drake's Passage to the pack ice and then down the west coast of the Graham Land peninsula, the British sector of Antarctica, working on geology, geophysics and upper air research, sometimes from static bases and also on journeys with dog-teams. Fauna encountered included Weddell and Leopard Seals, Adelie, Gentoo and Emperor Penguins, Blue-eyed Shags, Brown Skuas, Sheathbills, Cape Pigeons and the Giant Petrel which cannot take off from land. Red lichen was found growing on the coast, and mosses, in one sheltered area, which had formed peat up to three feet deep. There were only two flowering plants - Antarctic Tufted Hair-grass and Antarctic Pearlwort.

The beginning of winter saw the forming of round pans of ice on the sea and the start of the sledging journeys of three to four months on which Antarctic pyramid tents were used and the men never took off their clothes.

Among the beautiful slides shown were shots of mountains 'plastered' with hoar frost, of sledging trips and dog 'characters' and of the wonderful colours of a winter noon.

Mr. Winham's was a vivid account of a young man's Antarctic adventure, enlivened with humorous tales of man and dog and hardships encountered.

November brought us nearer home when another of our members, Dr. Shelagh Smith, who carries out research on Molluscs for the Royal Scottish Museum and the Nature Conservancy, talked about the many members of the Mollusc family to be found on the shores of the Firth of Forth. There were reckoned to be 300 species present and to date she had found 150 of them. Some lived on sand and mud, some on seaweed and some on rock. She illustrated examples of these types of habitats on the Lothian coast and some of their mollusc inhabitants, describing the interesting habits of some, eg the Limpets which after 'grazing' on the rocks returned to their own particular holes dug by them on the soft red sandstones, and the Sea-slugs which ate anemones and incorporated the latter's stings in their own defence mechanisms.

Dr. Smith backed up her lecture with a comprehensive display of mollusc shells, all found at Aberlady, including Chitons, two kinds of Razor-shells, the more unusual Pelican's-Foot and Hungarian Cap Shells and that of the Common Oyster, all labelled according to habitat and feeding habits of the animal concerned.

The last meeting of 1976 was addressed by Dr. Michael Burge of Strathclyde University on "Plants and Habitat Factors". Habitat factors illustrated by Dr. Burge in a progression from bare mountain top to sea-level, were - elevation, with its attendant exposure to extreme cold, high wind and precipitation and sparse soil; slope, which determined wetness or dryness of soil; the nature of the underlying rock, determining the mineral content of the soil; non-availability of soil nitrogen; rapid leaching; competition for light and for soil nitrogen in deciduous woodlands; rich alluvial soil beside rivers; marshy or dry meadows; salt levels in sea-meadows; shifting sand and submersion in seawater.

Among the defence mechanisms and symbiotic associations developed by plants for survival and regeneration in such circumstances were - the rolled leaf of heather with its thick layer of wax on the outer surface to prevent the evaporation of water; bog myrtle's association with micro-organisms in the soil to fix atmospheric nitrogen; the enormous cells in the leaf structure of sphagnum moss for holding water; the insect-catching mechanism of Sundew, Butterwort and Bladderwort to ensure nitrogen supply; the bulbils of Alpine Bistort ensuring reproduction; the structure of Scots Pine needles to prevent excessive drying up; the staggered and layered growth of plants in woodlands, the tendency to big leaves in such situations and the use by the trees of fungi in the competition for soil nitrogen; the lumps on the roots of Alders, signs of another symbiotic association to obtain nitrogen; the large air chambers in the leaves of the Yellow Water-lily; the Sea-buckthorn with its root nodules and the deep tap root system of the Sea-holly; the extensive root system and rolling and unrolling leaf of Lyme-grass; the vegetative reproduction of Spartina, used in reclaiming land from the sea, and the petal-less flowers of the Eel Grass which tolerates total submersion in the sea.

Dr. Burge illustrated his points with fine habitat and plant pictures, and slides of leaf cross-sections and root systems.

K.P. Wilson

PONDS AND AMPHIBIANS IN EDINBURGH AND MIDLOTHIAN

One would need to be a very senior citizen to remember the early years of the present century when ponds, ditches and marshes were a common feature of the countryside near and about Edinburgh. Yet even then, according to William Evans in his account of the reptiles and amphibians of the Edinburgh district some years earlier in 1894, reclamation and change of land use were altering the character of local ponds. Natural ponds were giving way to artificial ponds in quarries, ditches and the various holes made by industrial excavations, such as claypits, brickworks, gravel pits and the like. Even so, amphibians could continue to breed for they had standing water.

This process of change in the countryside has continued and intensified through the years with the spread of urban life, the making of new roads and altered farming practice, all requiring land drainage and infilling of ponds. That standing water of various kinds is vital to the breeding of amphibians and that the continued drainage of such freshwater habitats is a matter of concern to responsible naturalists and country lovers, need hardly be stressed in a natural history journal. It was this concern that prompted the recent five-year pond survey run by the Lothians Branch of the Scottish Wildlife Trust. The scheme was initiated and planned by the late Ian Sime, and many members of the Edinburgh Natural History Society gave generous help with recording and information. The results of this survey are now being considered by the branch committee of the Trust.

Some interesting facts emerge. Amongst those relating to Edinburgh and Midlothian Districts it turns out that of the 52 and 100 sites respectively surveyed in both districts, 3 and 23 per cent were found dry and in Midlothian another 20 per cent were found with little water left, enough, perhaps, for frog-spawning in some cases, but no more. What, then, of the vital remaining ponds? The large reservoirs in the Moorfoot and Pentland Hills were found to hold the greatest numbers of frogs and toads. The Union Canal along its entire length from Fountainbridge to West Lothian is an important freshwater habitat where frogs and toads have been found in some numbers as well as the occasional newt. But even after five years' search it is difficult to say where the greatest number of newts is to be found. A very few old-established newt ponds were discovered and sometimes these housed frogs and toads as well; mostly, however, newts were found in small numbers, in ones and twos, often in some small body of water such as a ditch, large puddle or marshy area. Such sites are quite usual for Palmate Newts and Smooth Newts which have been found in similar small water bodies. In only a few ponds were they seen in spring, swimming about in numbers. But in some instances this may well be due to the timing of visits to ponds which was found to be a vital factor in estimating amphibian numbers. At the start of the breeding season, usually sometime in early March, large congregations of frogs can be seen in the water, followed some three weeks or so later by gatherings of toads, the frogs by then having spawned and left the water. But the return of newts to water is seldom seen. During the survey sightings of swimming newts were made usually in warm, still weather. Great Crested Newts were found in Edinburgh District but so far none has been found in Midlothian and we know that at least three former breeding sites are now dry. Smooth and Palmate Newts were found in both districts but thinly distributed.

Such, then, is an outline of the distribution of amphibians found in the two districts during the last five years and that this present distribution represents a decrease to that which obtained in the early 1960s can be judged after reading R.H.R. Taylor's report on the breeding of reptiles and amphibians in the British Isles 1963. The late William Hall organised the Scottish contribution to this survey and he also did much valuable work in West Lothian for the SWT survey before his sudden death in 1973.

Little has been said so far of the different types of pond found. These vary from large reservoirs, such as Gladhouse and Threipmuir, from quarry ponds and constructed industrial ponds as can be seen at Auchendinny, from ornamental lakes as on Preston Hall and Middleton estates to ponds of various sizes found in fields, perhaps natural in origin and subsequently dug to make watering places for stock. There have been few of this last type found, also few farm ponds; for the most part ponds in and about farm steadings, including disused mill dams, have been found with little water left and the lock gate open where they were not already dry and the land returned to other uses. We knew that they had been there in the first place since they were marked on the current 2½ inch to the mile OS maps; lists of sites were drawn up from these maps and checked by recorders. Mention should be made of the natural pools to be found in still or slow flowing parts of a stream or river. Often these pools have remained stable long enough for pondweed, starwort and sometimes hornwort to become established, so providing a breeding habitat for frogs, toads or newts. Such sites have been found on the South Esk river and also in Pentland Hill burns. They are necessarily a fragile habitat since, should severe flooding occur, they might well be swept away. To return to the City of Edinburgh, where some 16 ponds were looked at in public parks or on golf courses, St. Margaret's Loch, Dunsappie and Duddingston Loch are all sizeable water bodies where fishing may be had, to judge from the number of young fishers on the east shore of Dunsappie and the number of ducks on Duddingston Loch. Whatever influence so formidable an array of potential predators beside and on these waters may have been, the fact remains that during the last five years only one or two frogs and toads have been seen there. Frogspawn was found in Dunsappie and in St. Margaret's Loch only once. Neither frog nor toad has been seen in Blackford pond for years according to the park keeper; none was recorded during the period of the survey. However, the ponds in the grounds of Lauriston Castle and the Royal Botanic Garden still hold breeding Amphibians and so occasionally does Lochend.

It can only be concluded, then, that the Common Frog and the Common Toad are being driven further out, away from urban areas, to our remaining undisturbed countryside. The Smooth, Palmate and Great Crested Newt hang on in places, the last named species being very scarce indeed. Small ponds and ditches continue to be drained and quarries infilled as urban areas expand and develop - a fact which many of us have observed for some time past. All the more need for the two current projects taken in hand by the Lothians Branch, the first being the construction of a series of ponds at Bawsinch, beside Duddingston Loch, where freshwater flora and fauna native to the district will be maintained and the second, the purchase of Milkhall pond near Howgate where again freshwater flora and fauna, particularly the invertebrates and the amphibians, will be protected. Eventually both these sites will be available for educational purposes.

These two projects represent a small contribution to the 1976 European Wetlands Campaign and it seems appropriate to put forward the fore-going brief account of our local ponds, streams and other freshwater habitats at this time. They all have their characteristic plant and animal communities, the diminution or loss of which make our wildlife heritage the poorer. Whatever practical steps can be taken to protect this should be put forward. Again, your suggestions and information are welcome - and needed.

E. Hamilton

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BLACK RATS ON INCHCOLM

On a visit with the RSPB to Inchcolm on 1st June there were some 400 pairs of Herring Gulls and 20 pairs of Lesser Black Backs mostly with eggs. So it was puzzling to find, on 23rd June, that there were only a very few grown young and hundreds of gulls sitting disinterestedly on the sea with no eggs or small young visible. The few Fulmar were all on the north-east cliff with none at all on the very suitable south-east facing crags. All was resolved when the custodian, Mr. Grubb, said that he had been having problems with the rat population and had had to mount control operation. Then he mentioned casually that these were Black Rats *(Rattus rattus)*.

In the 16th century the Black Rat was common but by the mid-18th century the Brown Rat had appeared in the Forth and the smaller species disappeared (Rintoul and Baxter 1935). Although Rintoul and Baxter stated that the Black Rat was extinct in the Forth area in 1935 this was not exactly the case. Mr. Ritchie Seath (personal communication) has known of its presence on Inchcolm for many years. He states that a previous custodian, Mr. Fred Scoughall, who was on the island for some 20 years from the mid-1920s to the mid-forties, sent some specimens to the zoo but they apparently would not breed there and died out. The Black Rat was at that time considered to be 'indigenous' on the island.

When did this rat get to Inchcolm? One possibility is that some have escaped to the island during this century. If so, they must have come from a boat that had arrived from overseas as their breeding areas in Europe must be very restricted. But this must be considered rather unlikely as there is so little contact between Inchcolm and any sort of shipping. It is much more likely that Inchcolm was colonised in the era of the Black Rat and that, when the Brown Rat invasion came, there was left this one tiny group, perhaps the sole survivors over the whole of Great Britain. If the colony has remained viable during the last 50 years (since 1925) there seems no reason to doubt that it could have been there for more than the 250 years since its mainland brothers became extinct.

The Port authorities responsible for vermin control are well aware of the rat's presence on the island and are apparently content to keep its numbers under control but otherwise to leave it in peace. It seems unlikely that Inchcolm can ever hold a flourishing sea-bird colony while the Black Rat remains there. But there are plenty of islands in the Forth and who can grudge one of them as a last sanctuary for these ancient villains?

R.W.J. Smith

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THE RED MOSS

The Red Moss or Balerno Common, the finest peat moss remaining in the Edinburgh area, has now become a Nature Reserve under the management of the Scottish Wildlife Trust.

Peat is made up of plant remains only partially decomposed. It forms under waterlogged conditions where there is little of the oxygen present necessary to support the micro-organisms which cause decay. Pollen grains from plants growing at the time of the peat formation become enveloped in the peat.

By sinking cores in the peat covering of a moss, it is possible to remove samples of peat from different levels and examine pollen grains and other plant remains in them - the outer wall of a pollen grain is very resistant to decay and the characteristic pattern on its surface usually makes it possible to identify the species from which it comes. In 1965, Dr. W.W. Newey, of the Geography Department of Edinburgh University, investigated the peat of the Red Moss in this way and as a result was able to work out its vegetational history.

Dr. Newey gives the following account of the results of his investigation:

"The Red Moss is a raised bog or raised moss which consists of a peat bog higher in the central part than at the margins. Ten boreholes placed along a south-west to north-east transect indicated a maximum depth of about six metres (19½ feet). Analysis of the pollen taken from the bottom samples of peat suggest that the moss began its formation about 5000 years ago, in the Neolithic period. The present surface consists of the characteristic mosaic of hummocks and hollows found on such bogs, with abundant Sphagnum moss *(Sphagnum* spp*)*, Heather *(Calluna vulgaris)*, Cottongrass *(Eriophorum* spp*)*, Bell Heather *(Erica cinerea)*, Cross-leaved Heath *(E. tetralix)*, Cladonia spp - lichens, and other species, active growth of which is still proceeding. The flora of the Moss and of adjacent habitats has been described by Myerscough. A topographic survey of the Moss was made by Kirby (1970).

Development of the Moss in terms of the stratigraphy of the organic deposits is indicated by the borehole data; pollen analysis of successive samples gives information of the vegetational history of the Moss and of the surrounding area (Newey 1965).

The Moss began its existence as a shallow lake or marsh, occupying a basin-like depression in the boulder-clay sheet which extends over much of the Balerno area and of the lower slopes of the Pentland Hills. This aquatic origin of the Moss is indicated by the fragments of Sedge *(Carex)* and of Reed *(Phragmites)* found in the bottom deposits which overlie the glacial sand and clay deposits. Rapid colonisation of the lake or marsh took place, however, by a fen association of scrub Birch *(Betula)* and Alder *(Alnus)*; this stage is suggested by the frequent wood fragments in the peat and by the abundance of pollen of these tree species in successive analyses; pollen of Oak *(Quercus)* and of Elm *(Ulmus)* together with that of Hazel *(Corylus)* suggests the presence of mixed oakwood forest at this time in the vicinity of the site, probably on the drier soils of the lower slopes of the Pentlands.

The scrub fen stage was succeeded by the spread of Sphagnum mosses across the area, and together with Cottongrass *(Eriophorum)* these plants rather rapidly built up thick layers of acid peat above the wood fragments of the fen stage. The climatic change which took place about 2500 years ago and which began the present era of cool, moist conditions assisted the rapid growth of the bog-mosses. From a depth of four metres up to the present surface the peat is poorly humified Sphagnum/Eriophorum peat, indicating its rapid formation. There is an abundance of pollen of the heaths (members of the family Ericaceae) in these samples, suggesting the spread of heath in the area at this time.

W.W. Newey
Department of Geography
University of Edinburgh

SOME EFFECTS OF SEWAGE POLLUTION ON THE FLORA AND FAUNA OF THE FIRTH OF FORTH

Introduction

In 1972 Edinburgh Corporation commissioned a one-year feasibility study, followed by a further six years of research into the effects of sewage disposal on the Outer Forth. This was to provide three years of work before and three after the introduction of the new sewage scheme in 1976.

Under the present system, 60 million gallons of crude and screened sewage is discharged daily using eight outfalls between Cramond and Joppa. Under the new scheme all sewage will receive primary treatment before being discharged through a single outfall at Seafield. Sludge will be removed by tanker and will be deposited in the mouth of the Forth.

Context

In some respects the Outer Firth of Forth is more marine than estuarine. It is wide, exposed, and circulation is influenced more by the North Sea than fresh water inflow. Salinity is rarely less than 90 per cent of the salinity of North Sea water. On the whole it is not grossly polluted, though there are some grossly polluted inshore areas caused by unsatisfactory methods of waste disposal.

With the introduction of the Edinburgh Sewage Scheme, the greatest changes are expected along the south shore, therefore the inter-tidal zone on this shore was chosen for the present study. Three rocky shores and three sandy beaches, all subject to pollution, were selected, with one further site of each type (approximately 12 km east of Edinburgh) being included as unpolluted control sites. These sites can be graded from grossly polluted to relatively unpolluted as follows:

Rocky shores : West Granton, East Granton, Joppa, Ferny Ness.
Sandy beaches: Seafield, Portobello, Cramond, Seton Sands.

Along the coastline there are other effluents which will not be included in the Edinburgh scheme. Among these are 12 million gallons from East Lothian and Midlothian and discharges from Scottish Agricultural Industries, South of Scotland Electricity Board and the National Coal Board.

Pollution effects

Ecological factors are changed by the discharge of effluent and may be summarised as follows:

Nutritional change
a) increased organic material (food for animal life);
b) increased inorganic nitrogen and phosphorus (food for plants).

Physical change
a) increased turbidity (reducing sunlight for green plants);
b) increased silting (altering the nature of sea bed).

Chemical change
a) deoxygenation; b) toxicity.

At the more polluted sites these changes have led to reduction and loss of non-tolerant species; an increase in those species able to tolerate the adverse conditions and/or benefit from the increased food supply, reduced predators and competitors; and on occasions the invasion by species which are not normally members of the community.

Macroalgae and macrofauna of rocky shores

The rock outcrops at West and East Granton support only two-thirds of the larger invertebrates and algae found at Ferny Ness. These consist of extensive populations of a restricted number of species. At Joppa the faunal and algal picture is intermediate between Granton and Ferny Ness.

West Granton is a relatively steep outcrop of sandstone covered with barnacles and winkles but only sparse seaweed growth. There are some dense patches of mussels. Species' diversity is low with 21 species of macroalgae and lichens and 17 species of macroinvertebrates. Further details of the species present at this site and at Ferny Ness, a low lying outcrop of sandstone and dolerite extending from Mean High Water Springs to Mean Low Water Springs, will be found in the full report in the Society Library. Of particular significance at West Granton is the absence or scarcity of species which should normally be present. It has been suggested that suspended matter in the water may be the main influence on the flora and fauna at West Granton.

Macrofauna of sandy beaches

Since most sand-dwelling organisms are either directly or indirectly correlated with sediment type, measurements of particle size and organic content of sediments were carried out. The four beaches consisted mainly of fine to medium grain sand with increased silt/clay at the west end of Seafield beach and in mud deposits on parts of Cramond beach.

At Seafield and Portobello the macrofaunal community structure is characterised by a low variety of species some of which are in very high numbers. A more diverse fauna is present at Cramond and Seton Sands, with maximum diversity at Cramond. The condition at Cramond may be due to increased food supply without detriment from pollution; also to the fact that mud deposits on the sandy beach have increased the diversity of habitats. High population density at Seafield beach is largely due to two species of worms normally associated with pollution.

We are most grateful to Mr. P.A. Read, of Forth Pollution Research Team (Napier College), for allowing us to reproduce a shortened version of his paper 'Some Effects of Sewage Pollution on the Flora and Fauna of the Firth of Forth'. The full text with maps, food webs, tables and bibliography is available in the Edinburgh Natural History Society Library.

TWO BUTTERFLIES

The most exciting happening is taking place. Not since Green Woodpeckers moved north into Scotland and first nested in Yarrow in 1950 has a smmilar event occurred. The present 'green woodpecker act' is being performed by the Orange-tip Butterfly. It was last recorded at Gordon Moss in 1880 but has apparently been present locally in south Roxburghshire for many years, and it is from this nucleus that the present extension of habitat has taken place. Last year a number of new sites were recorded culminating in the first Selkirkshire record when a solitary male was seen at Bowhill, Selkirk. This year there have been many sightings at Ettrick, Selkirk and Earlston, and eggs have been found.

There is no mistaking the male which is like a Small White butterfly but on the tip of each forewing there is a lovely orange patch which shows prominently when the insect flies past. The female is less easily separated from the commoner whites, though to a practised eye it can be identified in flight. She carries a black spot in the middle of the forewing, but the underwings of both sexes have a characteristic chequered green and white pattern.

There is no shortage of foodplant. The specific name of the Orange-tip is *cardamines* after the Lady's Smock or Cuckoo Flower *(Cardamine pratensis)* and that is what the caterpillar eats, though the preferred foodplant locally is undoubtedly Jack-by-the-Hedge or Garlic Mustard which is abundant all over the countryside by hedge roots and on waste ground. The eggs, like yellow ninepins, were discovered on the stems of the unripe capsules of Jack-by-the-Hedge, and my friend A.B. reared some to maturity. The larvae lie along the capsules which they eat, and their green shading make them very difficult to see.

The slender pupa is tapered at both ends and held to a stem with a silken band round the middle. It is incredible to me that such a thing can exist undamaged for nine months, for during this time any bird or mouse might eat it, but a good proportion do so and mild winters doubtless have helped to account for their increase

This has been a good butterfly summer. We cannot rival the numbers and variety further south. In Oxfordshire, for instance, in July there were 16 species in an oak wood which was reasonably moist. We do have our specialities, however, and one of these is the Scotch Argus *(Erebis aethiops)* and in August they were literally in hundreds at their chosen places. Erebia refers to the underworld because of the dark colour, and aethiops refers to Ethiopia for the same reason, though I prefer the older name *Erebia blandina*, "the charming little black butterfly" as near as could be!

You will gather that it is dark brown, nearly black in a fresh specimen, with a few black and white eye marks on an orange band, and underneath it is marked with shades of brown and buff, the female being noticeably lighter in colour. *Blandina* is about the size of a Small White and it emerges punctually during the first week of August when Devil's-bit Scabious is in flower and there are lots of thistles and knapweed to supply nectar. On a small patch of knapweed near Selkirk there were at least 50 of these butterflies, mostly males whose numbers predominate, but more females would doubtless be busy laying eggs on favourite grasses, and as we walked along the woodland path in sunshine dozens more rose from the ground. The Grayling is a butterfly, common on the coast, which habitually lies over on its side after alighting, thus avoiding a shadow and blending with the background, and I notice that the female *blandina* also adopts this ruse occasionally. If there is sunshine the Scotch Argus will fly, but if it is dull very few will be seen They favour uncultivated grassland particularly on woodland edges or broad rides where the sun can penetrate, and there are several places in Roxburghshire and Selkirkshire where they are established.

I have a special affection for *blandina* for this was the quarry on my first butterfly hunting expedition led by my schoolmaster. Tied to my bicycle was a net of the type sold for catching minnows which was the only kind available, and I recall the amusement of my mentor when I succeeded in capturing a specimen which fluttered in the net now pressed firmly on the ground. How was I going to get it out without allowing it to escape, he asked. I then discovered the reason for the deep kite-shaped net which he carried.

The caterpillars feed until the end of September when they hibernate, still very tiny, until spring. Feeding is resumed, mainly at night, until early July and a search with a torch will find them on the grass. If touched they immediately fall to cover. They are quite ordinary, pale buff, and rather slug-like, and the pupa is hidden in the grass stems. I found a dead butterfly this year lying on the ground, the reason for its death being that it had not been able to withdraw a forewing from the pupa case which was still attached. It was therefore unable to fly or to feed.

There were also unusual numbers of the colourful Small Tortoiseshells this year, so I will finish with a question - Why were they known as "Witches" when I was young? Is this purely a local name?

A.J. Smith

SOME NOTES ON NATURAL HISTORY

Leech found at Gordon Moss - 12th August 1975

On Saturday, 12th August, an entomological excursion visited Gordon Moss S.W.T. Reserve. Several leeches were noted in the burn at the western end of the reserve, where the disused railway line crosses the stream. One animal was taken for identification. It was kept carefully in a small glass container filled with water from the burn. On returning to Edinburgh the animal was introduced to a small aquarium, filled with pond water until such time as it could be narcotised, killed and identified. (It is a feature of leeches that conclusive identification can be made only by microscopic examination of the extended animal, and this necessitates the methods employed.) However, on the following morning (Sunday) the animal was found dead in a very much contracted state on the bottom of the aquarium, and 120 live young were clinging to the bottom and sides of the tank. The female had presumably died after releasing the young from the brood pouch. As the little leeches were far too small for identification (c. ⅛ inch long), and their parent too contracted to identify, the contents of the aquarium were placed in a local stream in the hopes that some of the young might survive. At this age baby leeches would be nearly impossible to hand rear in an aquarium and no small flatworms were readily available for them to feed themselves. As it was not practicable to return to Gordon Moss for a week, most of the young would have died before they could be returned to their home stream. Although the release of an unidentified leech species into a Midlothian river system may be reasonably considered bad ecological practice, it is unlikely in this case that a "foreign" species would have been introduced.

R.J. Harper

Sack mystery in Northumberland

While on holiday in Northumberland with my parents this year, I was puzzled by the fact that bits of rough sacking about 20 inches square were tied to several gates leading to a private estate. On examining the material I observed that it had been impregnated with a strong animal-like scent, similar to that of fox. Can anyone provide an answer to my problem of the smelly sacks?

Colin Bell

Notes on unusual insects observed on ENHS outings

Dark Green Fritillary - Argynnis (Mesoacidalia) aglaja

This large orange butterfly was seen by Mr. A. Buchan and myself at Douglas Burn on 31st July 1976 (see page 43). It receives its name from the undersides of the wings, which are suffused with dark green. It is locally common, but far more often seen than caught. The large dark spiny caterpillars feed on Dog Violet in May and June. This particular insect was seen on the flower of a tall thistle, for which it has a partiality. Regrettably it was not approached very quietly and it took flight.

December Moth - Poecilocampa populi

This moth was found on the trip round Hopes Reservoir, near Gifford, on 6th November 1976. It has a very wide distribution, is caught regularly, but is never seen in any great numbers. It is well-known for its size, linked to its flight period November and December, a rather unusual period. It always looks worn due to its thin scaly wings. With its time of flight it can be confused with no other. Its relatives include the well-known Oak Eggar, Fox Moth and Drinker.

Also seen on the Hopes Reservoir outing were the pupae of two species of Sawfly - *Trichiosoma sorbi* and *Cimbex femorata*, the Large Birch Sawfly. The adult insects are formidable looking and are not as their name suggests flies, but are more akin to the wasps. They are, however, quite harmless.

These species are both supposed to be rare, but I have discovered three birch woods, two in the Moorfoots and one in the Lammermuirs, where they may be found. Before trees are used as breeding places the insects have to be fully mature. Their pupae which were seen, are hard oval cylinders attached to birch twigs.

Andrew Liston

Lizard on the Cheviot

During August 1976, while descending the Cheviot into the Langleeford valley in Northumberland, I had an interesting encounter with a lizard. I saw movement amongst the moss and long grass and at first I thought it was made by a frog or a toad. I looked more closely, and to my surprise I identified it as a lizard. I turned away to tell my father and when I looked again the lizard had disappeared into the long grass. However, on looking closer I saw further movement and when I knelt down to pick up the lizard I discovered not a lizard but a lizard's tail. The tail wriggled about on my palm for two or three minutes. I had not touched the lizard itself and although I knew that the lizard could cast its tail to escape the grip of a predator I did not realise it would cast its tail without being touched. Is this the action similar to that of the octopus and its ink? Perhaps someone could tell me if the lizard casts its tail to distract a predator while making its escape.

Colin Bell

Invasion of ladybirds

I wonder if any member of ENHS noticed the 'invasion' of south-east Scotland by ladybirds during the weekend, 13th to 15th August 1976? We had read, a week or two before of a migration in England, which caused a stoppage of work on the Humber Bridge, which was scarcely credible unless one had actually seen such a migration.

When walking round Musselburgh Lagoons on 14th August, I saw hundreds (if not thousands) of seven-spot ladybirds *(Coccinella septempunctata)* flying in and forming large clusters all along the sea wall. There were among them also a few small red/orange and small yellow species, which I was unable to identify satisfactorily. A friend who was at Tyninghame on 13th August told me that there was a wide 'tide-line' of stranded ladybirds on the shore.

Dr. C.B. Williams, in his book "Insect Migration", gives an interesting account of similar ladybird migrations, but mainly in England. Six of our 40 species are known to migrate in mass movements and the seven-spot also migrates in Turkistan and India.

M. Mowat

Reference

Williams, C.B. Insect Migration. The New Naturalist. Collins.

Swallow v. Bat

On a hot, cloudless day in mid-August and at noon, my husband and I were sitting in the parkland behind Dunkeld Cathedral, when I noticed a small, reddish-brown bat, almost certainly a pipistrelle, flittering and apparently feeding around the Chile Pine in front of us. As we watched it, one of the numerous swallows which, together with house-martins, were 'hawking' for insects all around the area, began to pursue and attack the bat. Despite the bat's rapid changes of course in flight, the swallow's speed was greater, and five or six times we heard the distinct click of contact before both flew out of our sight. It seems doubtful whether the swallow could inflict any real damage to the bat's leathery wings and furry body, but it certainly succeeded in driving the bat away from its original feeding territory.

M.R. Watson

Corstorphine badgers

Reports have been received of three badger road deaths in the vicinity of Corstorphine Hill during the past year.

On the night of Thursday, 19th August 1976, a 17 lb female was killed on Craigcrook Road between the entrance to Craigcrook Castle and the junction with Ravelston Dykes. In the past, badgers have been seen crossing the road in this area and there has been the occasional road death.

Nine days later on the 28th August, a large sow badger was killed on Clerwood Road near the turning into Clerwood Park, while a third badger was killed close to the bus terminal on Clerwood Road on either 22nd or 23rd October 1976. Unfortunately, no other information is available on this last death, as although the site was visited within an hour of receiving a telephone call, the corpse had gone, probably having been removed by the refuse men who had just emptied the buckets along the road.

Records of any sightings of badgers in the Corstorphine area would be most welcome so that more can be learned of their movements in the neighbourhood, and in particular so that an attempt can be made to establish the routes used by animals leaving the Hill. Dead badgers will also be gratefully received from anywhere in the Lothians for routine examination - length, weight, sex, approximate age, and coat colour - and will be returned to the finder if so desired.

E. Farquharson

Hen harrier roosting at Aberlady Bay Nature Reserve

Hen harriers occur infrequently at Aberlady Bay, and it was with no small amount of pleasure that a handsome male was observed flying in from the south-west late in the afternoon of 1st February 1976, and then hunting. At first, the sighting was regarded as a winter bird extending its hunting range.

The bird was again seen on the 4th of the month at dusk, and on the 7th a watch was set up to wait for the bird which appeared and settled in to roost for the night. This event became the highlight of a birdwatching day on the Reserve, and on the 8th about 10 people were waiting at dusk to catch sight of the grey harrier.

From the 10th, the time and direction of arrival were noted, and were as follows:

Feb	hr	from:	Wind
10	1635	east	S/W force 3/4
13	1720	north	N/E force 2/3
14	1730	N/E	Southerly breeze
15	1720	N/E	Northerly breeze
16	1730	east	Southerly breeze
17	1655	east	Southerly breeze
19	1715	N/E	Virtually no wind
21	1655	east	S/E breeze
22	1639	east	Southerly breeze
23	1724	east	S/W force 4/5
24	1600	east	S/W force 4/5

And that was the last day on which it was seen coming in to roost - a notable loss to the events of the day.

This is the first record known to me of a Hen Harrier coming into roost at the Nature Reserve but let's hope that it is not the last. Fingers crossed for February 1977!

Russell G. Nisbet
Nature Reserve Ranger

OBSERVATIONS MADE BY MEMBERS DURING 1976

4.1.76 40-50 Redwings and a small flock of Redshank were seen on the playing fields of the Police Headquarters at Comely Bank. They stayed for three or four weeks. Many Redwings were in Inverleith Park, also three Pochard on the pond. This is unusual as only Mallard and Common gulls normally frequent it. *C.S.*

17.1.76 Three Waxwings were on a television aerial in Craigleith district. *C.S.*

28.1.76 One Waxwing seen on Hawthorn on the Pilton disused line. *E.F.*

29.2.76 Remains of Earth Stars *(Geaster* sp*)* in the wood at Yellowcraig, East Lothian. *E.H.J.*

→ When young, an Earth Star looks like a Puff-ball, but later its outer thick wall splits into lobes which turn back to look like the rays of the sun. It is unusual to find the Earth Star so far north - a result of the 1975 summer weather, probably. *J.R.*

3.5.76 Wild Tulip *(Tulipa sylvestria)* and Toothwort *(Lathraea squamaria)* were seen flowering in Berwickshire. *C.S.*

5.6.76 At Corehouse a double-flowered Lady's Smock or Cuckooflower *(Cardamine pratensis)* was seen near the lake and pink Bugle *(Ajuga reptans)* in the woodland. In the flora a Bugle with pink flowers is described as rare. *P.B.*

6.6.76 Manx Shearwater seen off Seafield. *A.R.*

7.7.76 At 5.30 pm while waiting for a bus at the GPO, I watched a Kestrel swoop on a pigeon. It failed to catch its quarry, and flew to a vantage point on the corner of the GPO. Five minutes later it again swooped on a pigeon, this time sinking its talons into the bird's back, both predator and prey then fell earthwards, below North Bridge and I did not see the outcome of the contest. *R.J.H.*

8.7.76 On this very hot sunny day and in the Balerno area, Grid Reference 137655, a Scotch Argus *(Erebia aethiops)* was seen. *C.C. & J.R.*

12.7.76 I watched a butterfly settled on Red Clover *(Trifolium pratense)*. It had a wing span of about 6 cm. The upper wings were orange-brown, plentifully covered with rows of black spots. This, I believe, was a Dark Green Fritillary *(Argynnis aglaja)*. The place was East Kinleith Farm, above Currie. *C.P.R.*

17.7.76 On Bankhead Moss - a SWT Reserve - a specimen of *Cordulegaster boltonii*, a large black and gold bodied Dragonfly, was seen briefly among trees. It was over three inches long in the body. *C.P.R.*

21.7.76 The original clump of Hoary Plantain *(Plantago media)* first observed at Gosford Bay in 1974 (see 1975 Journal, page 17) was seen to have spread. There were several clumps this year. *P.B.*

24. 7.76 On the outing to Dalkeith Woods birds seen included Long-tailed Tit, Pheasant with young, Mistle Thrush, Dipper on South Esk, Spotted Flycatcher and Heron. *M.W.*

14. 8.76 While parking on the side of a small country road near the A1 a covey of 12 Partridges walked across the road and up Traprain Law. From the top of the Law my family and I caught sight of a family of kestrels.*C.F.*

14-15.8.76 During the dry weather, at first light, a Roebuck regularly feeds in the fields on the other side of Westhouse Road, Mayfield. On this occasion, he crossed the road and entered the garden (open plan) and consumed two rows of lettuce. On the 15th he returned at first light and removed two summer cabbage hearts He ignored broad beans and herbaceous flowers and shrubs. *R.J.H.*

21. 8.76 On the ENHS outing along Lady Mary's Walk near Crieff, the following butterflies were seen: Small White, Green-veined White, Meadow Brown, Small Copper, Small Tortoiseshell, Red Admiral.

Also seen was a bat. Some members thought it was a Pipistrelle *(Pipistrellus pipistrellus)*, others thought it was Daubenton's Bat *(Myotis daubentonii)*. Both bats are small, those favouring Pipistrelle noted that it was flying by day, those favouring Daubenton's remarked that it flew over and by water. *C.P.R.*

31. 8.76 Small Copper butterfly and five Red Admiral butterflies were seen flying over herbaceous vegetation at the edge of the triangular birch wood near the Red Moss Reserve. *J.R.*

10. 9.76 Two Peacock butterflies and 14 Red Admirals seen feeding on Michaelmas daisies in a garden in Balerno. *C.C.*

19. 9.76 Grass of Parnassus *(Parnassia palustria)* seen in flower at the head of Glensax, Peebles. *C.C.*

2.10.76 *Clitocybe gigantea* and *Lepiota rhacodes* were two of the fungi seen on hillside pasture on the Abbey St. Bathans outing.

Also seen on this outing near Abbey St. Bathans was a roadside gibbet bearing bodies of 74 moles. *C.P.R.*

4.10.76 Red Admiral butterflies seen in the Carrington-Edgeland area on a day of clear sunshine, following rain the day before. 20-plus geese flying overhead. *E.H.*

15.10.76 At 8.30 am a Kingfisher was seen in the Dean Village on the Water of Leith. *G.C. per C.S.*

17 & 25.10.76 Pigweed *(Amaranthus retroflexus)* and the grasses *Digitaria sanguinalis*, *Echinochloa crus-galli*, *Setaria lutescens* and *S. viridis* were found growing at the base of grain silos in Leith Docks. *E.H.J.*

→ Pigweed is described in Clapham, Tutin and Warburg's 'Flora of the British Isles' as a rare and impermanent casual from North America and the four grasses listed as casuals of waste places near ports, their native environment being the warm and warm temperate regions of the earth. *J.R.*

6.11.76 Hibernating Small Tortoiseshell butterflies found, six, hanging wings tightly closed, from inside of wooden roof of small shed by Hopes Burn in the Lammermuirs. *E.H.*

11.11.76 A Collared Dove was repeatedly mobbed by a flock of small birds - mainly sparrows with a blackbird and a starling, as it flew around the back of gardens of the houses in Craighall Gardens and Craighall Terrace. As the colouration and outline of the collared dove superficially resembles that of a Kestrel, perhaps the small birds mistook it for the bird of prey. A pair of Kestrels regularly hunt over the same area. *R.J.H.*

FIELD WORK AND SURVEYS

LOTHIANS POND SURVEY - Organised by the Lothians Branch of the Scottish Wildlife Trust, the field work has now been completed and a report by Mrs. E. Hamilton is on page 6 of this Journal.

UNION CANAL SURVEY - An article on this continuing survey is on page 22.

Organiser - Mrs. E.M. Smith, 33 Hunter Terrace, Loanhead.

FORTH ISLANDS BREEDING BIRDS SURVEY - the results of this year's counts of the birds on five of the inner Forth islands are given on page 24.

Organiser - R.W.J. Smith, 33 Hunter Terrace, Loanhead.

CORSTORPHINE HILL SURVEY - Small mammal studies have been in progress for a year, and a resumé of results is published in this Journal. Further studies will be continuing on other parts of the Hill and elsewhere for comparison. The bird-list (barring unexpected additions) is completed, and a Habitat Survey of the area has been furnished to the British Trust for Ornithology. The species total is 58, and interested members can obtain a copy of the list from Mrs. M. Watson. It is hoped to make a start on a botanical survey this year.

Organiser - Mrs. E. Farquharson, 6 Chamberlain Road, Edinburgh 10.

HABITAT SURVEY - The Lothians Branch of the Scottish Wildlife Trust is arranging a programme of field trips to finish the Habitat Survey in 1977. Outings will be every Sunday from Edinburgh, with a few groups working independently in other districts. If you think you can help please contact A. Sommerville, c/o SWT, 8 Dublin Street, Edinburgh 1 (Tel. 031-557 1525), or J. Ballantyne, 6 Mansfield Place, Edinburgh 3 (Tel. 031-556 5453 - evenings) straight away. These outings are perfect occasions to get to know the Lothians in some detail and in convivial company, while doing a very worthwhile job. A full and enjoyable training will be given to everyone on their first turnout.

LOTHIAN BADGER SURVEY - Large areas of all three counties still remain to be surveyed. Volunteers willing to cover a small area of countryside are needed.

Organiser - Mrs. E. Farquharson, 6 Chamberlain Road, Edinburgh 10.

HOUSE MARTIN SURVEY - Information is sought on the breeding of House Martins within the City boundary, and notes on sites, numbers of nests, and breeding success, if known, will be welcomed.

Organiser - C.P. Rawcliffe, 35 Comely Bank Road, Edinburgh 6.

Anyone interested in taking part in any of this field work will be welcome and it is stressed that lack of specialist knowledge is no barrier. A keen eye and enthusiasm are the virtues most required! Volunteers please apply through Mrs. M. Watson, 8 Ormidale Terrace, Edinburgh 12 (Tel. 031-337 7430) or direct to individual organisers.

EXCURSIONS - 1976.

Key for excursions: B - Botany, *E* - Entomology, *f* - fungi, *Ff* - Freshwater fauna, *G* - General, *Ge* - Geology, *IBC* - Island Bird Count, *Lh* - Local History, *M* - Mammals, *O* - Ornithology, *S* - Shore

On Saturdays and at Weekends			Leader
24 Jan	Trees in winter - Roslin Glen	*B*	Miss J. Raeburn
21 Feb	Lagoons	*O*	Mr. C. Pountain
20 March	Winter walk - Ormiston Circuit	*G*	Mr. H.S. Hughes
17 April	Blackness and Midhope	*G*	Mr. H.S. Hughes
24 April	Union Canal	*Lh*	Mr. J. Howdle
1 May	Duns Castle, Mutiny Stones	*O/B/G*	Mr. C. Moir
8 May	Bathgate Hills	*G*	Mr. T. Anthony
14-17 May	Teesdale	*G*	Assistant Regional Officer & Miss R. Harper
22 May	Hamilton Low & High Parks with Hamilton Natural History Society	*O/B*	Members of Hamilton NHS & Dr. M. Burge
29 May	Inchcailloch	*G*	Mr. G. Bell & Mr. C. Pountain
5 June	Lamb & Fidra	*IBC/O*	Mr. R.W.J. Smith
	Corehouse	*O/B*	Mrs. M. Allan, SWT
12 June	Craigleith	*IBC/O*	Mr. R.W.J. Smtth
	Scone Pinetum and Tayside Walk	*O/B*	Mr. H.S. Hughes
19 June	St. Abb's (Marine Life)	*O/B*	Mr. R. Weatherhead, Mr. D. Jones, Mr. J. Winham
26 June	Inchkeith	*IBC/O*	Mr. R.W.J. Smith
	Grangepans & Kinneil	*B*	Mr. J. Carlyle
3 July	Garleton Hills	*G*	Mr. G. Bell
10 July	Bass Rock, with Perth Scciety of Natural Science	*O*	Mr. C. Pountain
17 July	Bankhead Moss & Anstruther's Fisheries Museum, with Scottish Wildlife Trust		Mr. J. Brownlie
24 July	Dalkeith Palace Woods (by permission of Buccleuch Estates Ltd)		Dr. W.A. Fairbairn
31 July	Douglas Burn	*B*	Mr. A.J. Smith
7 Aug	Lauder Common	*E/B*	Dr. A. Sommerville
14 Aug	Siccar Point	*Ge*	Dr. C. Waterston
21 Aug	Crieff Area, with Dundee Naturalists' Society	*G*	Mr. J. Cook & Mrs. E.C. Bain
28 Aug	Loch Leven	*Ff/G*	Mr. K. East
4 Sept	Aberlady	*O*	Mrs. E. Smith
11 Sept	Balerno Area, with Botanical Society of Edinburgh	*f*	Dr. P. Mason
17-20 Sept	Hadrian's Wall		Mr. W. Sternie & Miss R. Harper
25 Sept	Woodend, Newton	*f/G*	Miss R. Harper
2 Oct	Abbey St. Bathans	*G*	Mr. W. Clunie
9 Oct	Castlelaw Fort & Pentland Circuit	*G*	Mr. G. Bell
23 Oct	Lomond Hills & Falkland Palace	*G*	Mr. G. Bell
20 Nov	Trees in the Bush Estate	*B*	Dr. W.A. Fairbairn
18 Dec	Lagoons	*O*	Mr. C. Pountain

Evening excursions

			Leader
28 April	Seafield	*S*	Mr. P.A. Read
5 May	Dean Village to Canonmills	*G*	Mr. C.P. Rawcliffe
12 May	Port Seton	*S*	Dr. S. Smith
19 May	Lagoons - Introduction to sea birds	*O*	Mr. C. Pountain
26 May	Roslin - Introduction to bird song	*O*	Mrs. E. Hamilton
June	Salisbury Crags, with Edinburgh Geological Society	*Ge*	Prof. G.J. Craig
2 June	Currie Kirk	*Lh*	Mr. J. Tweedie
9 June	Slateford Dell	*B*	Miss J. Raeburn
16 June	Edinburgh New Town, with Edinburgh Geological Society	*Lh*	Mr. W. Tulloch
23 June	Cramond (mosses)	*B*	Mr. D. Long
	Inchcolm	*IBC/Lh/O*	Mr. R.W.J. Smith
29 June	Zoological Gardens		Mr. R. Wheater
30 June	Bush Estate (grasses)		Dr. P. Harper
7 July	Red Moss (Balerno Common)	*B*	Miss J. Raeburn
14 July	Lagoons	*O*	Mr. C. Pountain
21 July	Blackford Glen	*G*	Mr. G. Carse
28 July	Canal	*Ff*	Mrs. E. Smith
4 Aug	Bush Farm (Livestock)		Dr. M. Black
11 Aug	Braid Burn	*M/G*	Mrs. E. Farquharson
18 Aug	Holyrood Park, with Botanical Society of Edinburgh	*B*	Mr. J.C. Brownlie

Informal excursions - In addition, several informal excursions took place during the winter season.

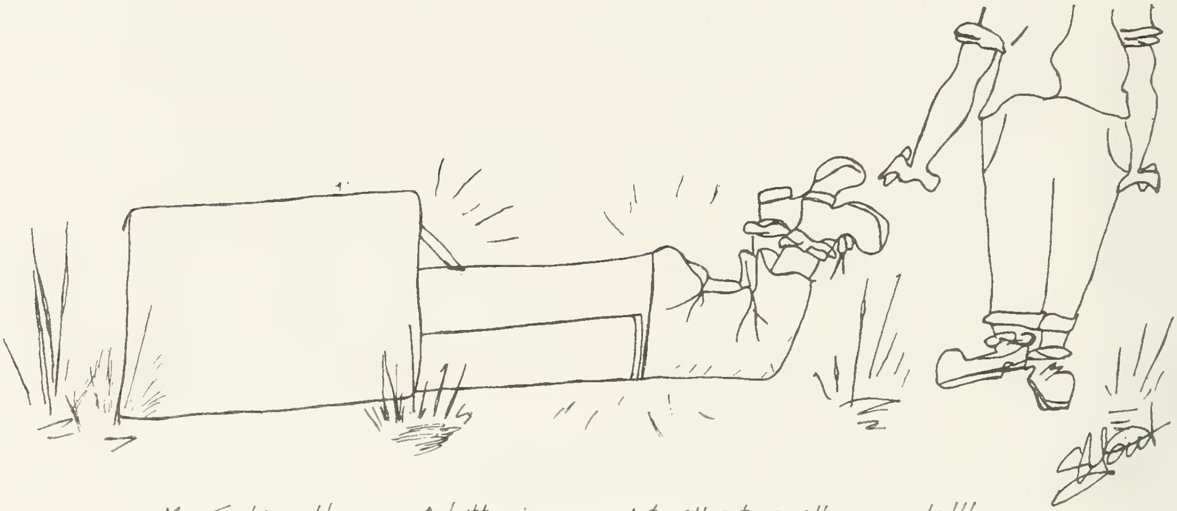
REPORTS AND EXCERPTS FROM REPORTS

Mammals on Corstorphine Hill 1976

In the last Journal the beginning of the programme of live trapping on Corstorphine Hill was recorded. This October saw the completion of the first year of the project, and the results are now being worked on. During the winter months (November-March) traps were set on Saturday morning and lifted on Sunday afternoon, having been inspected on Saturday afternoon and Sunday morning to see what had been caught.

From March onwards, increasing daylight allowed members to set traps on a Friday evening, giving 48 hours trapping time, and an additional overnight catch. Traps were set in pairs at marked stations on north-south and east-west transect lines. Some half a dozen members have taken part regularly, while others have come on one or two weekends.

It was most noticeable during the winter months that most of the catch was male Wood Mice, while as the weather became milder and the days lengthened a few female Wood Mice and some Bank Voles came into the traps. At the height of summer, catches dropped to rock bottom, the reason for this being uncertain, but may have reflected the dry weather and the pre-occupation of small mammals with the breeding season. While small rodents are raising their young, they tend to be less inquisitive and therefore less likely to enter traps. By August the trapping became really interesting, with a large number of traps occupied both overnight and at the daytime inspection. Bank voles and Wood Mice remained the most frequently caught species, but Short-tailed Vole occurred on the north-south transect in an area of willowherb and nettle with young trees; only one trap site produced shrews. They always occurred at this one site, which was interesting, as the rest of the area was equally suitable for shrews to inhabit.



Mr. Tomkins, the peanut butter is supposed to attract small mammals!!!

The aim of the trapping programme has been to relate the species present with the diet of the resident Tawny Owl on this part of Corstorphine Hill.

Plans of the trapping area, and analysis of the results obtained this year will be worked on and written up for a later Journal. Another programme of trapping will be worked out for 1977. We would like to thank the Carnegie United Kingdom Trust for the grant which purchased the Longworth Live Traps for the project.

R.J. Harper

Corstorphine Hill Birds

A sighting of a cock Hawfinch was reported in last year's Journal. On 23rd April 1976 a pair was seen in the same area, but the birds have remained elusive for the rest of the season. An exotic touch was provided by a pair of Mandarin ducks in a beech tree, discovered, on enquiry of Mr. Wheater, to be free-flying from the Zoo aviary.

M. Watson

Union Canal Survey

Mrs. Alexina Gillespie and I have made fortnightly visits for a full year to Meggetland and Harrison Bridge, supplemented by occasional visits to other parts of the canal and to some half-a-dozen ponds. As well as the regularly recorded species there were some interesting incidents. We were commenting one day on never having found Volvox, a simple, free-swimming green alga. On that self-same day, 24th August, the canal at Linlithgow looked like green soup with millions of these algae. Each is a tiny transparent hollow sphere about the size of a pin-head and constantly revolving by the beating of numerous swimming hairs. We have not seen Volvox since.

On 30th September at Meggetland, in muggy damp weather, there had obviously been a recent hatch of caddis flies. There were six of them along one yard of verge clinging to the waterside vegetation. In a space of two yards were three spiders dining on caddis flies.

On another occasion, we found a commonly occurring flat-worm, *Dendrocoelum lacteum*, that was infested with a sporozoon, a parasitic protozoon. The flat-worm's body was covered with white spots giving it a 'measly' appearance. Over 150 of these parasites were counted in this one specimen. A subsequent visit to Broxburn yielded many such infected flat-worms.

Helobdella stagnalis is a tiny leech found commonly in the canal. It feeds mainly by sucking the body fluids of midge larvae. The leeches of this genus show a degree of parental care by carrying their young around attached by their tail suckers to the parental underparts. One of these leeches had translucent lumps in its body and we concluded that this was due to another parasitic protozoon.

Records of water beetles and dragonflies have been incorporated in their respective atlas schemes. Included in our water beetle records, most of which are of widespread occurrence, is one, *Haliplus immaculatus*, which is rare in Scotland (Garth Foster, personal communication). It had been previously recorded from the canal at Colinton in 1937 and at Ratho in 1951. Of particular interest are the records of *Coenagrion puella*, from near Muiravonside cemetery in West Lothian. This insect is very similar to another of the blue damselflies, *Enallagma cyathigerum*. The latter is common not only in the canal but in many other places, whereas *Coenagrion puella* has not previously been recorded from the canal nor in fact from anywhere in this area. Mating pairs of this species were seen on 20th July and 24th August. On this second visit the towpath vegetation had been completely mown down to ground level along this section. The damselflies had no vegetation on the towpath side to cling to and there were no flowers to feed other insects such as butterflies or bumblebees. We could not find the great botanical rarity of the area, Pink Masterwort *(Astrantia major)*, although it was in evidence on our previous visit. All the considerable botanical and entomological interest of the towpath had disappeared over a long stretch of the canal. This sort of tidy-mindedness is very damaging to the environment.

Dr. J.C. Sheldon, of the Physical Planning Department of the Lothian Region, requested the help of the ENHS with a survey of the canal. Several of our members collected and provided data and we were able to compile a provisional list of aquatic plants and animals in the canal and to comment on the towpath flora. He was delighted with our efforts and found our information most useful.

Members of the Royal Scottish Museum staff have, as always, been most patient and helpful with problems of identification and we are greatly indebted to them and also to Garth Foster who has cheerfully undertaken to check our water beetles.

Anyone interested in helping with our continuing survey of the canal should contact Mrs. Gillespie or myself.

E.M. Smith

Forth Island Bird Count 1976

	Inchcolm	Inchmickery	Inchkeith	Fidra	Lamb	Craigleith
Fulmar	8		446	70	2	70
Cormorant					150	
Shag		6	3	20	210	201
Greater Bl Back						1
Lesser Bl Back	*c* 20	*c* 5	*x*	*c* 20	*c* 5	*x*
Herring Gull	*c*400	*c*100	*x*	160	300	*x*
Kittiwake			351	275	94	*c*480
Common Tern	*Pr*	635		*Pr*		
Roseate Tern		100				
Sandwich Tern		566				
Razorbill			15	10	12	64
Guillemot			1	25	500	1700 bds
Puffin			750 bds	40 bds		1350 bds

Fulmar - occupied sites, not necessarily breeding
Craigleith Guillemot - birds on breeding cliffs
Puffin - all birds, on land and off-shire
All others - pairs or nests
x - present but not counted; *c* - about
Inchmickery counts by kind permission of the RSPB

The 1976 island trips from North Berwick went smoothly in spite of a fresh SW wind that strengthened, necessitating a retreat down the sheltered east cliffs of Craigleith. At the Newhaven end, however, there was even more confusion than usual when our usual boat was sunk by vandals in the harbour a few days before the first trip. A desperate attempt by Mrs. E.M. Smith to locate another boat was successful only after two trips had had to be cancelled. The boat we obtained after the eleventh hour was the very fine yacht Dunpelder and we are very grateful to Harry Lindsay for taking us out. Unfortunately, the maximum allowed was 12 people and the dates of the trips also had to be altered, so not all those who booked were able to go. I can only apologiee to those who booked and were disappointed.

Shags, once again, provide the main topic of interest. On the three East Lothian islands of Craigleith, Lamb and Fidra there had been a drop of nearly seven per cent in the number of nests between 1974 and 1975. This year there was a further decrease of 8.5 per cent - a total drop from 507 to 431 nests in two years (*c* 15 per cent). This is the more unusual since it follows an almost continuous increase since 1959 which averaged about 10 per cent per annum. We hear that, on the Isle of May, there has been a much more dramatic decrease (numbers may be only one quarter of what they were a few years ago). On the Inner Forth the reverse is happening with Shags colonising the Haystack (one nest), Cow and Calves (2) and Inchmickery (6). There was an increase on Inchkeith from two to three nests and on Carr Craig from 13 to 15 nests, so that the total number of breeding pairs rose from 15 to 27.

There was another 'red-tide' on the Forth/Farnes sector of the North Sea, the second year running that this has occurred (see Journal 1975, page 28). One could speculate that Shag numbers on the East Lothian coast have perhaps reached the upper limit that the food supply could support and that there is now a 'settling down' to a relatively stable population. However, the decrease on the May is too drastic to be explained in this way. It is more likely that the May, being further out than the other islands from the sheltered Firth of Forth, has been more exposed to the effects of the red-tides. Probably the consequent 'kill' of Shags, and to a lesser extent other seabirds, has been much higher on the May. This would tend to explain the differential mortality among the various breeding colonies. The unprecedented spate of colonisations in the Inner Forth may well be because young birds are being forced out of the big East Lothian colonies, either to get away from the dangerous toxic areas, or perhaps because of a dearth of fish due to heavy mortality caused by these toxins. It seems that we always have to wait until 'next year' to provide the answers!

The auks, so vulnerable to large oil spills, do not, fortunately, seem to suffer so badly during 'red-tides'. Once again there has been a general increase in all species. Guillemot jumped another hurdle in 1976 when a young bird was recorded on Inchkeith - the first proved breeding on any of the Inner Forth Islands. The RSPB have again been good enough to supply counts for Inchmickery (for which many thanks). The highlight is the Roseate Tern count, which, at 100 pairs, is the best for many years. It looks as though the conservation measures taken during the last few years are beginning to bear fruit.

R.W.J. Smith

Island bird counts - Fulmar and Kittiwake

For many hundreds of years - perhaps going as far back as the second century AD - one of the main foods of the inhabitants of St Kilda (which lies some 50 miles west of North Uist) was Fulmar, mostly collected as young birds just before they fledged. There may have been between 20,000 and 25,000 pairs of these birds and the numbers seem to have been fairly static for many years. There were no other breeding Fulmar in Britain. In the 1870's, there began a remarkable change when a few birds appeared off the sheer cliffs of Foula in Shetland and breeding was first proved there in 1878. These were the first colonists from the dynamic Icelandic stock which had been increasing for many years and had thrust south-east to colonise the Faroes some 50 years before this.

After only 20 years, in 1898, there were 'multitudes' nesting on Foula and they had spread to many other Shetland cliffs and to Hoy in Orkney. They had colonised the outliers North Rona and Sula Sgeir and were visiting Clò Mòr near Cape Wrath. This tremendous invasion from Iceland/Faroes continued with birds systematically prospecting the big headlands and islands and spreading to the lower cliffs later. Birds swept down the east and west coasts of Scotland colonising the St Abbs cliffs in 1913, the May in 1921, the Bass in 1923, Tantallon in 1929, Fidra in 1938 and Inchkeith in 1942 (Fisher 1952).

Although the May and Bass were the first to be colonised in the Firth of Forth, the steep vegetated cliffs of Tantallon and especially Inchkeith proved to be much more suitable for Fulmar than the sheer bare cliffs of the others. On our first visit to Inchkeith in 1959 there were at least 103 sites, and between 135 and 165 sites until 1965. The following year saw the start of a tremendous increase there with numbers trebling in seven years to a peak of 450 in 1972. After stabilising around the 400 mark, there were 446 sites in 1976 - which is more than all the other Forth colonies combined. Only time will tell if this is the beginning of another upward movement.

Craigleith has suitable breeding cliffs for Fulmar but suffers from an annual invasion of small craft and consequent disturbance. The loss of a grown Fulmar chick does not deter the adult birds from returning to the same site the following year, but when the egg is lost the bird does not re-lay and tends to desert the site in future years. So the fluctuating numbers and slow build-up on Craigleith can perhaps be linked with good weather in June. From 1972-1974, when the Inchkeith upsurge had abated, numbers rose from 50 to 90 sites on Craigleith. The first few weeks of June 1975 were calm and sunny and our visit was made after numerous parties had gone round the island - and our Fulmar count had halved to 45! However, there were 70 sites in 1976 so the colonising pressure has not slackened. Fidra has seen a steady increase from 7 to 70 sites and a similar pattern is noticeable on Inchgarvie (11 sites in 1961 to 55 in 1976), the Bass and the May. Even the Lamb, which seemed entirely unsuitable for Fulmar had its first egg in 1963 and two to three pairs are breeding now.

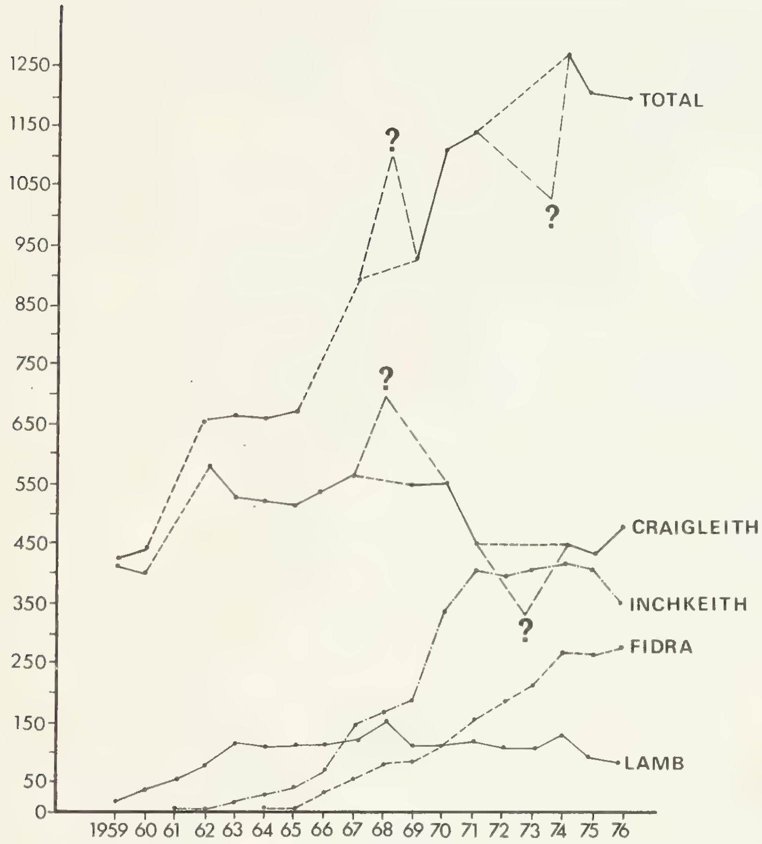
Fulmar are long-lived birds spending perhaps the first four years of their lives entirely at sea, then, during the next four (or so) years, in prospecting sites but not actually breeding. Small colonies contain a much greater proportion of non-breeding birds (sometimes 100 per cent with new areas being 'prospected'). It is sometimes difficult to differentiate breeding and prospecting birds so the standard count-unit is the 'site'. In the bigger, well-established colonies, most birds are breeding. Fisher (1952) states that in large colonies (where over 100 eggs are laid) for every 100 pairs that occupy sites in early June, over 90 eggs are laid, 70 or more young hatch and over 50 young eventually fly. On Inchkeith in 1972, 1974 and 1975 from some 400 sites about 150 well-grown young were ringed in August - and possibly 50 more were out of reach.

In his momentous book, Fisher concluded that up to 1914 there was an annual increase of sites in Britain of some 18 per cent and between 1914 and 1949 a smaller (but still substantial) increase of 7.3 per cent. With our island counts, there was a total increase on five islands (including Inchgarvie) from 195 sites in 1961 to 643 in 1976 - approximately eight per cent per annum. As the Bass and May increases have not been so spectacular as that on Inchkeith the overall increase in the Forth area could come remarkably close to Fisher's 7.3 per cent.

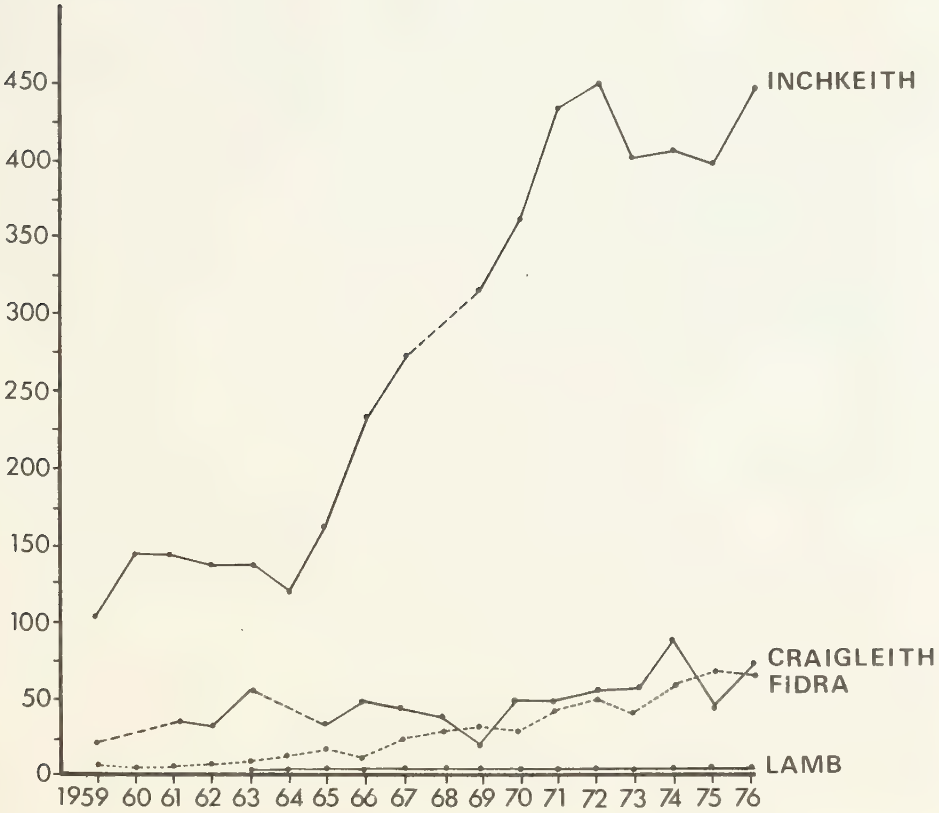
Following on the operation Seafarer 1969/70, Dr. J.C. Coulson (Cramp *et al* 1974) showed that Kittiwakes had been increasing for many years. Between 1959 and 1969 this was about four per cent per annum. The island counts fall into line with this, but the graphs do not show a simple annual increase on each island. Also, the picture is confused by the unreliability of the nest-counts of the east cliff colony on Craigleith which are made from a boat. The counts were made by different observers in conditions ranging from calm to 'fresh NE wind' and there is a large margin of error.

Our first estimates on Craigleith were just over 400 in 1959 and 1960, rising to 580 in 1962 and about the 520/550 mark until 1970 (with one rather optimistic 700 in 1968). G.L. Sandeman got only 120-plus pairs in 1951, so there had obviously been a marked increase during the next 10 years. Somewhere around 1969/70 numbers began to fall though almost certainly not as low as the 326 recorded in 1973. There may have been a slight recovery since then. Coinciding with the main decrease of Kittiwakes between 1969

KITTIWAKE COUNTS 1959-1976



FULMAR COUNTS 1959-1976



and 1972, there was a steep rise in the number of Guillemots on the East Cliff with a spread along suitable crags on the north side. Guillemots return to the cliffs much earlier in the year than Kittiwakes and are known to dispossess them of nest sites so there seems little doubt that the Kittiwakes were being displaced.

On the Lamb the first proved breeding of Kittiwakes (14 nests) was in 1959 with a rapid rise to 118 nests in 1963 since when numbers have been rather static and indeed have tended to fall recently. Again, on the main cliff, Guillemots took over many sites and the Kittiwakes have been forced to nest on some rather odd 'cliffs' further round the island.

Inchkeith was colonised in 1961 with a steady rise to 41 nests in 1965. After this the rate of increase sharpened with 187 nests in 1969 and 407 in 1971. This dramatic influx of 200 pairs in two years may well have come mainly from Craigleith. Numbers stabilised around the 400 level until 1976 when there was a reduction to 351 nests. Curiously the decrease was confined to the nests along the west side of the island with exactly the same numbers breeding on the east side as in 1975.

It was 1964 before Kittiwakes bred on Fidra and again, once the colony was established, there was a rapid build-up of numbers. Unquestionably some of the displaced Craigleith birds would contribute to this increase. By 1974 there were 272 nests and numbers have levelled off since then.

Although the overall picture is fairly clear, there are so many unknown factors that it is difficult to follow exactly what has been happening. Both the May and the Bass have large Kittiwake colonies (3280 and 1650 pairs respectively on Operation Seafarer around 1969). There has, apparently, been no great change in the breeding populations on these two islands between then and now. Guillemots have increased greatly on both islands and there may have been some displacement and perhaps exodus to other islands. In addition, 'red-tides' have occurred in both 1975 and 1976. This has caused heavy mortality among Shags but it is uncertain what effect it has had on Kittiwakes.

The graph showing the total counts of nests on the islands of Craigleith, Lamb, Fidra and Inchkeith suggests that there was a steady increase until 1974. The two major fluctuations of 1968 and 1973 were probably due to a too high and too low count respectively on Craigleith. Obviously, the Lamb cannot provide many more breeding sites but Fidra, where numbers have been static for three years, could accommodate many more pairs. On Inchkeith the drop of 50 pairs on the west coast was certainly not due to competition from either Guillemots or Razorbills. As the Kittiwake is essentially a pelagic species, it is possible that the slight decrease in the last two years may be attributed to 'red-tide' mortality.

From 1959 to 1976 the total number of Kittiwakes' nests on the four islands rose from 430 to 1200. This averages about six per cent per annum which is rather higher than the four per cent 10-year national average given by Coulson. However, as the May and the Bass together hold nearly 5000 pairs any surplus or displaced birds from there may well have gone to other islands and so account for the above average increase there.

R.W.J. Smith

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Cramp, S., Bourne, W.R.B.B. and Saunders, D. (1974) The Seabirds of Britain and Ireland. London.

Riccarton November 1975 - October 1976

As 53 species of birds were recorded in 1976, compared with 51 in 1975 one could say that overall there has been little change brought about by the increased use of the University site by students and others. Such absentees from the list in 1976 of Tawny Owl and Reed Bunting may not represent a real change but more a failure on the part of the observers to record. The following species bred: Coot, Moorhen, Little Grebe, Kestrel and Bullfinch, whilst singing males of Blackcap and Whitethroat were recorded. One bird seen more frequently was Long-tailed Tit.

Badgers survive, though their distribution has varied, whilst the occasional Roe Deer is to be seen. Frogs and Toads are still present.

A good specimen of *Peziza aurantia* (Orange-peel Fungus) was found on stony ground on 5th November.

I. Maclean & C.P. Rawcliffe

Local history outing to the Union Canal - 24th April 1976

The Union Canal with its bank and towpath edges has become a valuable habitat for wildlife. Its natural history is being studied by the ENHS under the direction of Mrs. E.M. Smith (see pages 22 and 42). The outing, for which a report follows, gave members a valuable insight into the historical background of this artificial waterway.

On Saturday, 24th April 1976, 30 members of the Society along with four guests spent a most enjoyable and informative day studying the local history of the Union Canal from Falkirk to Linlithgow.

We were truly fortunate in having Mr. Jack Howdle, from Currie, as our leader. His enthusiasm infiltrated us all. He told his story with much good humour too.

The Union Canal runs from Falkirk to Fountainbridge. In March 1818 the first turf was cut and the canal was opened four years later in 1822. Scotland's first public canal was the Forth-Clyde canal opened in 1795 and running from Grangemouth-through Falkirk-to Glasgow. With the Union joining the Forth-Clyde at Falkirk a vital waterway link between Scotland's two main cities was therefore created in 1822. A major problem had to be overcome before the canals joined at Falkirk. The Union was cut on higher ground than the existing Forth-Clyde - 210 feet higher - and therefore no less than 10 locks had to be constructed to bring the water down to the Forth-Clyde level. Understandably, where the two canals joined at Falkirk industry flourished. The junction was at Lock 16 (the 16th lock on the Forth-Clyde numbered from the sea end at Grangemouth) and to this day Lock 16 is known as a district of Falkirk.

On leaving Lock 16 and walking along the towpath towards West Quarter, we came upon a now unique construction - Scotland's longest and indeed virtually only remaining canal tunnel, and with torches alight we duly entered. It was slimy and wet, it was just under 700 yards long and it was well worth walking through. With our torches we obtained excellent views of stalactites and most attractive 'curtains' of stalagmites on the tunnel walls.

After lunching at West Quarter we went to the Slamannan Basin - truly a fascinating place for local historians - and here we walked along the site of Scotland's first public steam railway which was opened in 1837. Trucks of pig iron were off-loaded on to the canal barges waiting in the Basin. However, this railway was eventually by-passed by a new track system and thus in 1844 became surely one of our earliest rail closures.

Our final canal walk took us over one of the Union's three major aqueducts - the aqueduct over the River Avon. The other two are the Almond and Slateford aqueducts.

We did not have time to see any of the canal stables where the huge horses took their, no doubt, deserved rest, but our leader told us about these. We did, however, see two of the remaining four original metal canal barges still in existence. We saw many other aspects of local history, too, and Jack Howdle's lucid way of communicating it all to us somehow made it so much easier for us to imagine the busy scenes of an age sadly no more.

The day ended with a one-hour stop in Linlithgow. The loch was naturally an attraction and it was here that two swallows were seen - first of the season for many of us. An hour or so earlier many had seen their first Willow Warbler of the year while at Slamannan Basin. It was an excellent finale to a very nice day.

C.A. Pountain.

Two excursions to the Firth of Forth

The November lecture by Mr. P.A. Read on the effects of sewage pollution on the flora and fauna of the Firth of Forth, provided the basis for two very interesting evening excursions (see account on page 10).

Seafield - 28th April

The first to Seafield was led by Mr. Read, and the area examined was in close proximity to the sewage effluent pipe. This beach was remarkable for its lack of species. In the vicinity of the pipe, the only one was a species of suspension feeding worm, of the type *Scolepsis*, which was present in vast numbers, the resulting worm casts forming a large area of very soft mud. Some distance away these worms became less abundant and Lugworms, Hydroids or Sea-Firs and several Seaweeds were observed.

Port Seton - 12th May

The excursion to Port Seton, led by Dr. S. Smith, was a delightful contrast. Although there was still evidence of pollution, a wide range of species was observed on the lower and middle shore. Among these were Hydroids or Sea-Firs, Sea-Mats, Beadlet and Dahlia Anemones, Dead Men's Fingers, Sea Gooseberry, Sea Squirts, Breadcrumb and Purse Sponges, Barnacles, Bristle Worms; Shore, Edible and Hermit Crabs, Sea Slugs and eggs, Limpets, Common and Dog Whelks and their egg cases, Common and Rough Periwinkles, Topshells, Chitons, vast quantities of Mussels, large numbers of Common Starfish, Brittle-Stars, eggs of Blenny, Butterfish, a large fish probably a Viviparous Blenny, and a large variety of red, green and brown seaweeds.

M. Clarkson

Dean Village to Canonmills - 5th May

This was once again an interesting evening, particularly for beginners in ornithology who were introduced to town dwelling species plus a few unexpected ones. There were also matters of general interest, and members and friends were made aware of some items of natural history interest found in the city. We noted that Corporation repairs to the retaining wall below Dean Bridge had caused the loss of the small fig-tree that once grew out of the stones.

Some 27 species of birds were recorded; among them were several of particular interest, namely: Tawny Owl, Dipper, Tree Creeper, Grey Wagtail, Bullfinch and Redpoll. The Tree Creeper appeared to be visiting a nest behind loose bark on a tree not far from St. Bernard's Well.

C.P. Rawcliffe

Outing to Beecraigs Country Park - 8th May 1976

Steve Nunn and I led this outing. It was suggested that the object of the 'walk about' should be to show how specific items of management had been implemented since the Society's last visit.

A few brief introductory notes may be of interest to those members who have not yet visited the area. Beecraigs Reservoir is on the eastern boundary of the Country Park and the woodland area extends westwards to Cockleroy. The catchment area of the reservoir consists of approximately 560 acres of coniferous woodland. Planted by the old Water Authority the main species are Scots Pine, Norway and Sitka Spruce, Larch and a few Lodgepole Pine, Western Hemlock and one small but fine stand of Grand Fir *(Abies grandis)*.

The Rangers were quick to point out that the introduction of deciduous trees has top priority and that, of the 30,000 trees planted last year, 50 per cent were broad-leaved. Wet areas throughout will be left undrained where possible and planting of species of Salicaceae carried out. During weeding operations as much natural regeneration as possible will be encouraged, particularly Birch and Goat Willow, normally treated as 'weed' species by commercial foresters.

The route taken was the same as on the last visit. Passing the Badger sett, Mrs. Farquharson suggested lowering the bottom strand of the barbed wire fence to catch Badger hairs. This would be a useful clue for school parties.

A newly planted area on the north side of the reservoir was inspected. Experimental block planting of various species is being tried including Beech, Oak, Sycamore, Maple, Chestnut and Rowan.

Eric, the hatchery warden, who is a biologist and trained in fish management, aroused great interest in his explanation of the work involved in rearing Brown and Rainbow Trout.

The reservoir was constructed by German POW's in 1917 and was operational as a domestic water supply from 1920 until 1973. Total surface area of the reservoir when full in 19.5 acres with a capacity of 59.5 million gallons. The filter bed system was capable of purifying 370,000 gallons daily. The stone blocks comprising the face of the dam were quarried in the adjacent Riccarton Hills. Actual height of the dam pathway above sea level is 512 feet.

The reservoir is a popular fishing spot but as no bank fishing is allowed and only two boats are on the water daily, a nice balance between recreation and the welfare of a small duck colony is maintained. Steve is experimenting with duck trapping for ringing purposes during the non-breeding season.

Various sites where conservation groups have been active were viewed. These included steps, bridges and pathways. The young people involved were from the West Lothian and Edinburgh schools, National Conservation Corps and the ever-faithful Lothians Conservation Corps.

A stop for lunch in a lovely sunlit glade was welcome. Edinburgh University Ecological Society had completed a useful project here. Damming of a stream had created a small pool and heavy thinning of Scots Pine had been carried out to allow more light to reach the forest floor. A survey had revealed a rich flora which would be much improved by thinning of the heavy tree canopy. In the afternoon, further sites were visited including reconstructed dry-stane dyking, picnic furniture and more newly planted areas.

T. Anthony
Head Ranger
West Lothian

Through the eyes of a Member

After leaving the cars we walked towards the reservoir and inspected the newly planted trees, mainly hardwoods but with a scattering of conifers which are destined eventually to replace the existing protective screen on the north side of the reservoir.

On the way down to the reservoir we inspected an active badger sett and our Lady President gave us a fascinating account of the domestic life of the badger. From the evidence around the sett she was able to indicate the likely number of inhabitants and the family structure.

We then visited the fish farm and inspected the newly hatched Rainbow Trout as well as seeing and feeding the 1000 Rainbows, each weighing some eight ounces, and the 1500 Brown Trout of the same size. Our junior members were particularly keen on feeding the fish, maybe in the hopes that one day the roles might be reversed. After this we walked round the south side of the reservoir and saw and heard something of the work being done to create nature trails, build bridges and all the effort which is necessary if the public are to derive maximum enjoyment from the reserve and the reserve is to have minimum damage from the public.

On through the dense coniferous woodland, past a deserted badger sett where on an evening last summer in thick mist our family plus a French guest watched in vain for badgers - "these mad Scots".

Lunch was taken in a leafy glade and after a leisurely repast we proceeded to the south-west corner of the reserve where we witnessed a quite remarkable lesson in craftmanship. Under the expert guidance of a veteran builder of dry stone dykes about 25 young people were being trained in the basic skills of dry stone dyking so that they might go out to all parts of Scotland to lead Community Volunteers in restoring and rebuilding dry stone dykes. After seeing the master at work, no one could doubt that here was an ancient craft of great skill which resulted in something far more substantial, far more effective and far more beautiful than a post and wire fence.

Back through the trees enjoying views of West Lothian and Edinburgh, observing the light green foliage of the larches and enjoying glimpses of Green-veined White and Tortoiseshell butterflies we came to the proposed site for the information centre and from there it was a pleasant walk through plantations of young trees back to the car park.

No spectacular finds, no rare sightings, but a very enjoyable day's walk amid beautiful surroundings in good weather conditions and led by a Warden full of enthusiasm about what can be done with the Country Park to encourage the people of West Lothian, and particularly the children, to learn about and appreciate nature.

W. Farquhar

Upper Teesdale and Weardale, Co. Durham (Friday, 14th May - Monday, 17th May 1976)

Upper Teesdale is well-known to botanists for its immensely rich and varied flora, and for the rarities that this includes. The variety is supported by very complex conditions, different rocks which favour quite different groups of species occurring close together. The rarities flourish on the 'sugar' limestone, a unique low grade metamorphic rock formed when molten basalt pushed its way through the limestone, baking some of it to a crumbly crystalline marble which weathers to resemble coarsely granulated sugar. One of Teesdale's most special plants, the Spring Gentian *(Gentiana verna)*, is among species that have been shown, by pollen analysis, to have been growing there since the end of the last 'Ice Age' some 10,000 years ago.

We chose to visit Teesdale in May as this is the best time to see the Spring Gentian, though rather early for the main quantity of the area's flowers

On Saturday we went to Widdybank Fell in the Upper Teesdale National Nature Reserve. We were met by Dr. Tim Bines, one of the wardens, who gave us an introductory talk before handing us over to a colleague who guided us along the nature trail beside the controversial Cow Green Reservoir. The morning had started cold and solidly wet. What flowers there were tended to be closed and we were not inclined to stop for long to investigate them, but when we found small plants of Hoary Whitlow-grass *(Draba incarna)* flowering we were encouraged.

Our first gentians, a huge patch, temporarily in a sheep-proof enclosure, were tightly furled and we scanned the dark spikes in vain for one which might be significantly more open than the rest. However, we were lucky later on when the weather improved, to see a good scattering of them open and brilliantly blue, looking really beautiful.

Meanwhile, the rain, driven by strong winds sweeping across the exposed landscape, increased to hail as we approached the reservoir outlet. Water was pouring over the dam which normally releases a carefully regulated flow to the industries of Teeside 36 hours away. We followed it to Cauldron Snout, a spectacular long waterfall now in full spate, as was the footpath beside it. We scrambled down the rocks to continue the walk towards Widdybank Farm and distant Langdon Beck Hotel The rain became lighter and finally stopped. We were able to raise our heads to admire the crags of Falcon Clints towering above us and suddenly there were catkins on the Creeping Willow *(Salix repens)*, flowers on an overhanging Juniper bush *(Juniperus communis)*, a Bird's-eye Primrose *(Primula farinosa)* among its roots and Green Spleenwort *(Asplenium viride)* among the rocks. Marsh Valerian *(Valeriana dioica)* was just opening in a bog which would produce Alpine Bartsia *(Bartsia alpina)* later in the year.

To complete the afternoon, the coach took us down the dale to High Force. We gathered at the official tourist spot to watch the peat-brown water of the swollen Tees hurling itself through a gap in the high rocks, over the hard edge of the Great Whin Sill, into the deep pool below, in clouds of coffee coloured foam.

Sunday was cold but dry and we spent the morning at Winchbridge. There were patches of Goldilocks *(Ranunculus auricomus)* in the wood, and also Early Purple Orchid *(Orchis mascula)*. In the meadows were Marsh Violets *(Viola palustris)*, and Globe Flower *(Trollius europaeus)* and Bird Cherry *(Prunus padus)* just coming into flower. In the afternoon the botanists followed the Tees up to High Force. The season was late and apart from Mountain Everlasting *(Antennaria dioica)* and some very photogenic Primulas there was little to see. The Shrubby Cinquefoil *(Potentilla fruticosa)*, one of Teesdale's specialities, was just coming into leaf. A quick look at the Juniper scrub near High Force revealed both male and female bushes with flowers and green (first year) and blue-black (second year) berries. The more energetic members took a longer walk to see geological features and the less energetic visited Raby Castle.

Monday was warm and sunny. Our first stop was at Kilhope in Upper Weardale, an area long mined for lead and other minerals. Here lead ore had been crushed and washed to separate the galena from the useless stone, and the ruins of the 19th century buildings are dominated by a 34-foot high overshot waterwheel which once powered the crushing machinery. Upland Scurvy-grass *(Cochlearia alpina)* and Alpine Penny-cress *(Thlaspi alpestre)*, which thrives on lead, were growing in abundance on the spoil heaps. One of the attractions of Co. Durham is that mountain plants occur at unusually low altitudes. We were also pleased to find the first few flowers of Spring Sandwort *(Minuartia verna)* and some very fine Mountain Pansies *(Viola lutea)*.

We continued down Weardale past richly yellow dandelion meadows to the Reserve at Witton-le-Wear where we were welcomed by the warden, Mr. F.B. Stubbs, and his assistant who very kindly made tea for us. The Reserve was established in 1965 and a landscape of wet and dry areas has been created from the worked-out gravel pit beside the River Wear with rewarding results. There was obviously a great deal of pond and insect iife in this warm sheltered spot. A cuckoo was calling and a Kingfisher was seen. A very attractive hybrid willow *(Salix x meyerana)* was the most unusual plant. It was also interesting to see female plants of Butterbur *(Petasites hybridus)* - much less common than the male - and to find Morels *(Morchella vulgaris)* tucked away in the undergrowth. Recording of species in the Reserve is a continuing activity and we were pleased to add several more to the list. After more tea we set out on our return journey to Edinburgh.

Postscript: In the second week of June I revisited Cow Green and Winchbridge with the Wild Flower Society and found that three weeks had made a considerable difference - there were flowers everywhere. What did we miss by going in May? - greater quantities of the flowers we saw just coming out; there were carpets of Spring Sandwort; attractive plants that look equally attractive around Edinburgh, eg Bogbean *(Menyanthes trifoliata)*; flowers that we know on Scottish mountains - Scottish Asphodel *(Tofielda pusilla)*, Hair Sedge *(Carex capillaris)*, Upland Bistort *(Polygonum viviparum)*... What we really missed were a few of Teesdale's most special flowers, such as Alpine Bartsia and Shrubby Cinquefoil. But, on the other hand, in June the Spring Gentians were over.

E.H. Jackson

Visit to Hamilton High and Low Parks - 22nd May 1976 with the Hamilton Natural History Society

Hamilton High and Low Parks, lying in the valleys of the Clyde and Avon between Motherwell and Hamilton, have played their part in Scottish history. From the 18th century until the middle of the present one, the Low Parks were affected by coal mining and when the last colliery closed in 1958 a scene of desolation resulting from subsidence and flooding was left.

The Local Authorities in whose area the parks lie accepted a challenge. They planned to landscape the whole valley area and to develop a Regional Park with nature reserves and with facilities for various sports and outdoor activities.

Work began on the park - now known as Strathclyde Regional Park - in 1973, and members of the ENHS spent a very pleasant day in it hearing about its history and viewing progress in the reclamation of the derelict area.

We were welcomed by Mrs. Audrey Wallace, the Hamilton NHS Secretary, at the Mausoleum. This stands as a landmark on the south of the M74 as it rushes past Hamilton town. It was built by Alexander, 10th Duke of Hamilton (1768-1852), as a suitable resting place for himself and his family. The curator showed us the crypt where the family coffins were placed in recesses in the thick stone walls. They were mounted on wheels which allowed the curator to extract them and polish the woodwork at intervals. All have now been removed elsewhere.

The main building is a circular chapel on a base 110 feet in diameter, rising to a dome 120 feet high, which exceeds the height of Nelson's column in Trafalgar Square. The original doors are of solid bronze, 15 cwt each, designed by Sir John Steele, and cast by James Milne of Abbeyfield - both Edinburgh men. The door panels are facsimiles of the Ghiberti door panels in the Baptistry in Florence. Due to the building's circular design there is an over-powering echo which would make any service an ordeal.

The building took 15 years to erect starting in 1840, and cost some £100,000. Sandstone from three of the Duke's quarries was used, and the very tight joints are evidence of the mason's skill. This was tested when the ground sank 16-19 feet as the rich coal seams underneath were extracted. The building tilted eight inches before settling two inches from perpendicular. The ducal palace nearby suffered worse and was pulled down in 1926.

Across the valley, three miles away, lies Motherwell, the Scottish steel centre. The famous works of Dalziel, Clyde Iron and Steel, Mossend, and Ravenscraig produced their slag tips which the many coal pits supplemented with bings of blaes and shale. The ground subsidence allowed the Clyde to flood the valley and add to the desolation. Mr. Murdie, Director of Leisure, Hamilton District, explained how planners took up the challenge in June 1973, and at a cost of £10 million to date, have landscaped the whole valley in the Hamilton/Bothwell/Motherwell triangle. The Clyde with the Avon and the South Calder Waters which join together here, have been controlled to provide a new 200-acre loch for water sports, including a 2000-metre international-sized rowing and canoeing course. Golf courses have been extended, and several lochans provided for the waterfowl in the 335-acre sanctuary. While the landscaping scars are still visible, we saw Great Crested Grebe, Little Grebe, and various duck at home in the reed beds which will soon spread.

After a picnic lunch, we moved to Chatelerhault, in the High Park. This was the Duke's hunting lodge, but is now in ruins and may soon be demolished to allow the sand deposits underneath to be worked by the estate. We were cheered by sun bursting through the morning clouds, and by the sight of great activity in a colony of Sand Martins. Their nests were high up in a bank of sand left behind from the main workings. They were streaming in and out of their nest holes and gave us a wonderful display of aerial acrobatics. A Kestrel hovered nearby.

Michael Burge, Lecturer in Botany at Strathclyde University, explained how the flora was adapted to the poor sandy soil. This seemed to suit two very large Sycamores *(Acer pseudoplatanus)* said to be 200 years old. We were also surprised to see a Holm Oak *(Quercus ilex)* normally at home in the Mediterranean.

We finished by walking up the valley of the Avon Water, and across the river to Cadzow Castle, often referred to as Hamilton Castle. Built probably in 1440, it is in a badly ruined condition and well-covered with a jungle of vegetation. The Hamilton NHS have made a gallant start to clear the undergrowth.

K.W. Sanderson

Excursion to Inchcailloch, Loch Lomond - 29th May 1976

Geology

The Island of Inchcailloch lies at the south end of Loch Lomond opposite the village of Balmaha and forms part of the Loch Lomond National Nature Reserve Many of the notable geological features of the surrounding countryside can be demonstrated on or from this island.

Broadly speaking, the rocks outcropping in the vicinity belong to four geological periods, Dalradian, Lower Red Sandstone, Upper Old Red Sandstone and Carboniferous. The Dalradian series occurs to the north and north-west and consists mainly of metamorphic rocks such as schist, grit and slates. The Lower Old Red Sandstone consists mainly of conglomerates composed of round pebbles and boulders of vein quartz contained in a red sandstone matrix, derived from the Dalradian rocks to the north. Notable is the absence of schist boulders which would seem to indicate that the pebbles and boulders had been transported for some distance before deposition (schist disintegrates if carried any distance). The Upper Red Sandstone rocks also consist of conglomerates of vein quartz but in this case do contain schist pebbles which would indicate a not too distant source. To the south of Inchcailloch lies the flat plain of relatively young Carboniferous sediments through which have been intruded volcanic rocks such as nearby Duncryne Hill (basaltic plug) and the more distant lava flows of the Kilpatrick Hills. After the Carboniferous Period there is an enormous gap in our knowledge of events in this area until Glacial Times, which had such a profound effect on its topography.

Inchcailloch, itself, is composed of steeply inclined beds of the Lower and Upper Old Red Sandstone conglomerates described in the previous paragraph. Running between these two beds is the Highland Boundary Fault, that major dislocation which stretches from Stonehaven to Helensburgh and separates the Midland Valley of Scotland from the Grampian Highlands. Associated with the fault on Inchcailloch is an igneous intrusion of dolomite serpentine.

Our route over the island followed that of the Nature Trail which illustrates many of Inchcailloch's interesting geological and other features. Especially interesting was the steeply inclined rock face on the eastern side of the island where the composition of the Old Red Sandstone conglomerates can be easily examined. A number of the pebbles were seen to have sheared due to great pressures associated with the Highland Boundary Fault. Another major feature examined by the party was an outcrop of the intrusive serpentine referred to earlier. This rock is grey in colour, and highly alkaline in composition. This alkalinity is reflected in the soil which in turn has such a profound effect upon the vegetation which grows in the immediate vicinity of the serpentine outcrop.

G. Bell

Birds

Inevitably the rain, which sadly persisted throughout our visit, meant that there was considerably less bird activity than is normal on the island. The main highlight was being able to enjoy the singing of several Wood Warblers in close proximity to one another - a lovely trilling song.

Yet on a better day we would have seen so much more, for a recent survey has shown that Inchcailloch has an enormously high density of breeding woodland birds.

There are three main reasons why numbers are so high. The coppicing which took place mainly in the 16th and 17th centuries was based on remnants of the pristine forest and thus natural species, such as Wood Warbler, Redstart and Tree Pipit, were retained. In contrast, many English coppices have been deliberately planted, are more uniform and therefore are incapable of retaining so many species. The Oak, a dominant species on the island, provides an exceptionally high caterpillar crop, thus assuring birds of a good food supply.

A third reason for the high density is that the island character provides a safer refuge than could be expected in similar mainland woods. It also follows that on an island such as Inchcailloch it is comparatively easy to monitor and manage the bird life.

Forty-one species probably breed so that not only can the island boast an exceptionally high density but it can claim to have a very representative breeding list.

Certainly for our visit the weather was poor, yet the day served a real purpose for several members were introduced to Inchcailloch for the first time. Many of us will be tempted to return on another day in late spring or early summer and if the sun shines on that day it will be a memorable visit indeed.

C. Pountain

Flowering plants and ferns

The weather was not too good for flower hunting, but despite the sodden ground we found quite a number of plants. The most prolific plant was Climbing Corydalis *(Corydalis claviculata)*, a delicate much-branched annual, which seems to have taken over several parts of the island.

The Nature Trail was through forests of Oaks and Alders where little sunlight penetrates. In this dark, damp environment there were numerous ferns, including Male Fern *(Dryopteris filix-mas)*, Lady-fern *(Athyrium filix-femina)*, Soft Shield-fern *(Polystichum setiferum)* and a wonderful patch of Beech Fern *(Thelypteris phegopteris)*.

On the more open ground we saw carpets of Wild Hyacinth *(Endymion non-scriptus)*, also Yellow Pimpernel *(Lysimachia nemorum)*, Red Campion *(Silene dioica)*, Ground Ivy *(Glechoma hederacea)* and Lady's Mantle *(Alchemilla* sp*)*, all plants typical of wood edges. In the Alder grove on the boggier ground we found clumps of three sedges - Pendulous *(Carex pendula)*, Fox *(C. vulpina)* and Wood Sedge *(C. sylvatica)*.

Near Port Bawn we saw Globeflower *(Trollius europaeas)* a plant of mountainous districts and the small-flowered northern form of Marsh Marigold *(Caltha palustris)*.

A very slippery climb took us up to the view point - unfortunately, the coast line was lost in mist. But turning round to come down we saw a great mass of orange gorse which cheered us on our way back to the ferry.

M. Thomson

Edinburgh New Town Building Stone
A Joint Excursion with the Edinburgh Geological Society - 16th June 1976

There can be little doubt that the architectural beauty of Edinburgh's New Town is enhanced by the choice of building stone employed in its construction. Much of the stone was obtained locally from quarries working sandstones laid down in the Early Carboniferous Period. A few buildings are, however, constructed in an attractive rich sandstone, of Permian Age, quarried at Closeburn, Dumfriesshire.

The excursion, which was led by Mr. W. Tulloch of the Institute of Geological Sciences, commenced on Calton Hill where the party was given an outline of Edinburgh's geology in respect of the occurrence of its building stone. Most of the Carboniferous Age stone was extracted from quarries located in the Lower and Upper Oil Shale Group. The various building stones are named after the quarry from which they were hewn. For example:

Lower Oil Shale Group:	Craigleith Sandstone, Redhall Sandstone
Upper Oil Shale Group:	Binny Sandstone, Dalmeny Sandstone, Hermand Sandstone

Notable examples of buildings and the stone employed in their construction are as follows:

Bank of Scotland, 62 George Street	Dalmeny Sandstone
Bank of Scotland, 99 George Street	Hermand Sandstone
St John's Church, Princes Street	Redhall Sandstone
General Post Office	Binny Sandstone
Nelson's Monument	Craigleith Sandstone
Caley Station Hotel	Closeburn Sandstone

G. Bell

ENHS Members *v* Gas and Oil

On enquiring for B and B for members on the Ythan excursion in 1975 in the Ellon district, a letter in reply stated that all the beds were full of Gas and Oil.

Outing to St Abbs - Marine Life - 19th June 1976

A party of members travelled by coach and various cars to St Abbs on a sunny morning and made their way by various routes to the small bay of

Pethico Wick on the north side of St Abbs Head. Here a party of divers from the Edinburgh Branch of the British Sub Aqua Club were preparing their equipment for a dive to collect marine specimens from the underwater cliffs and gullies in the area. Dr. David Jones prepared sample trays and jars to receive specimens, whilst members ate lunch and the divers swam out to St Abbs Head. Seen en route were several members of the surface plankton, Sea Gooseberries *(Pleurobrachia pileus and Beroë cucumis)* and a Siphonophore. A feature of the surface water was the enormous quantity of young *Aurelia aurita* Jellyfish and a wide berth was given to one Lion's Mane Jellyfish *(Cyanea capillata)* fully 18 inches across which can sting quite severely. One diver noticed a Guillemot swimming along about 10 feet beneath him, no doubt looking for its dinner.

The party descended to the bottom at about 40 feet in a complex of gullies and started collecting. Several colonies of the Sea Fir *(Tubularia sp)* were seen and some taken which later proved to have Caprellid or Hopper Shrimps living on them. The stems of *Laminaria* seaweed were covered with Sea-Mat *(Membranipora membranacea)* on which browsed several species of Sea-Slug. Species collected were *Aeolid a papillosa*, *Eolis coronata*, *Archidoris pseudoargus*, and *Tritonia hornbergii* (determined by Dr. Shelagh Smith at the Royal Scottish Museum). By far the commonest of the encrusting organisms was Dead Men's Fingers *(Alcyonium digitatum)* with its leathery polyps extended. Also growing on the rocks and occasionally on loose stones were several Sea Anemones including - *Metridium senile*, *Sagartia* sp, *Tealia felina* and the common Beadlet *(Actinia equina)*. A specimen of Metridium was later prevailed upon to open its tentacles in a shaded bucket. Other inhabitants of the rock faces were Sea Gooseberry, Sea-Squirt *Dendrodoa*, and translucent colonies of *Clavelina lepadiformis*. Another Sea-Squirt attached to *Laminaria* was the Star Ascidian *(Botryllus schlosseri)*, a jelly-like object with a pattern of petals round an exhalant siphon. Lying about on the bottom were Sea Urchins *(Echinus esculentus)* and three species of Starfish *(Asterias rubens, Henricia sanguinolenta and Solaster papposus)*. We looked in various crevices, noting Lobster *(Homarus vulgaris)* and the royal blue patterned Squat Lobster *(Galathea strigosa)*. Three Crabs were seen - Spider Crab *(Hyas araneus)*, Hermit *(Eupagurus bernhardus)* and Shore Crabs *(Carcinus maas)*.

Many of the above species were brought ashore and also a couple of Laminaria holdfasts for members to dismember. These yielded the usual evil-looking marine worms and brittle stars. Several specimens were photographed before everything was returned to the sea.

J. Winham

Visit to Edinburgh Zoo - 29th June 1976

A party of about 30 members, with a strong junior contingent, was conducted around the zoo by Mr. R. Wheater, Director of the Royal Zoological Society of Scotland, on a glorious heatwave evening. This was so much more than a visit to the zoo. With our inspiring guide explaining the history and philosophy of zoos, current ideas in animal management, developments taking place at Edinburgh Zoo, especially with the help of the Job Creation Programme, it proved to be a memorable evening.

His stories were not without humour as when a lioness newly placed in an enclosure with glass windows launched herself through the air at visiting VIP's, open-mouthed in admiration. Fortunately, neither was the glass shattered nor the lioness hurt, although the inevitable collision occurred in mid-air at the top of her leap.

This brief account must not become a catalogue of animals watched but just personal highlights as seen by the reporter:

The new polar bear cubs in quarantine from Canada; one who made several attempts before arising from fast-asleep on his back, rocking himself up to sitting teddy bear position before lazily rolling back to his starting position on each occasion; the other investigating as closely as possible with paws, eyes and mouth, a member's handbag resting on the window sill beyond his glass screen; the gentoo penguin with private shower bath he had constructed by making a small puncture in a hose-pipe with his beak, standing in front of the water spray with flappers outstretched for full benefit.

Almost every enclosure was enthralling, in the light of verbal titbits of information so enthusiastically given to us by Mr. Wheater - the young sea lions, the prairie dogs, the cheetahs, the quiet condescension of the white stork, and not least the rigid stance of the penguins' Brigade of Guards. An outstanding evening whose memories will be with those members who came for a long time indeed.

G. Reynolds

Garleton Hills outing - 3rd July 1976

The Garleton Hills are a relatively neglected part of East Lothian and a visit will usually provide the enquiring naturalist with a variety of interesting subjects for study.

The excursion began at Barney Mains road end, one-and-a-half miles east of Haddington. Although the first part of the route was along a farm road, it was found to be much richer, botanically, than the remainder of the route. On reaching Barney Mains farm we made our way to Barnes Castle. This ruin, also known as the 'Vaults' or 'Vauts' because of the vaulted construction of its ceilings, was built in the 16th century by one John Seton. From the character of the remains and the persistence of the name 'Vauts', it is inferred that the building was never carried beyond the vaulted level at which it stands at present. The building is mentioned in the 'Lamp of the Lothians' as having been built as a court and, even in its present ruinous condition, a certain impression of stateliness of arrangement is apparent. Looking eastward from Barnes Castle we could see in the middle distance the Traprain Law and Pencraig laccoliths.

Retracing our steps to Barney Mains we walked westward over Barney Hill and Phantassie Hill to the now abandoned Garleton haematite mine. This mine is reputed to have produced over 10,000 tons of iron ore in the year 1874. The kidney ore occurs in a vein which runs along a crush belt in a north-westerly direction.

Leaving the mine behind, we continued northwards to Byres Hill. Here in 1824, the monument, so conspicuous from the surrounding area, was erected to the 4th Earl of Hopetoun. From the airy parapet at the top of the monument we were able to see clearly the relationship between the geology and landform of the district. The whole area is one of low relief and, generally speaking, is composed of volcanic rocks intercalated in sedimentary strata belonging to the Calciferous Sandstone Measures of the Carboniferous Period. These rocks have a gentle dip to the west. Locally, however, the relatively harder volcanic rocks, of which the Garleton Hills are composed, form an area of relatively high relief. The eastern movement of ice during the last Great Ice Age has left the Garleton Hills with a decidedly east/west alignment. Reaching ground level again we made our way past the small lochan, situated in the depression just south of Skid Hill, and on to Craigie Hill.

Craigie Hill, also known locally as the 'Table Mountain' is the site of an Iron Age fort. It provides a perfect example of a crag and tail formation. On its north face is a small cave known locally as Wallace's Cave while at the base of the hill to the south is the ivy-covered ruin of Garleton Castle.

The last leg of our route took us by way of 'Mutton Hole' to the top of the Kae High ridge on which is situated the well-preserved remains of another Iron Age fort. We then made our way back to the starting point at Barney Mains road end where the meeting terminated.

G. Bell

A day in the past (100 years ago)
A visit to Anstruther Fisheries Museum and to Bankhead Moss - 17th July 1976

An outing organised by the SWT and ENHS enabled members to see how people worked and lived a century ago.

The first port of call was the Scottish Fisheries Museum at Anstruther, where we were shown a fisher's family room situated below a 'net-loft' or 'garret'. The life-size figures were most realistic and some of the furnishings brought back happy memories and stories to many of us. Other places of interest included the aquarium where we saw a variety of fish and shellfish found in Scottish waters. The 'ship loft' contained a wonderful selection of navigation instruments, ship's gear and a wheel house complete with working ship's radio and radar.

After leaving Anstruther, we travelled through rich farmland to Bankhead Moss. There we were met by Dr. Jean Horribane who explained the history and ecological interest of the Moss, now a reserve under the management of the SWT.

Bankhead Moss is one of the few remaining 'raised bogs' which once covered large areas of the interior of Fife. Although this is a small bog (150 x 50 m), it shows all the major features of a typical raised bog. The surface has the usual dome shape and rises 1.5 m above the level at the edges. (For further details about a raised bog see article on Red Moss - Balerno by Dr. Newey, page 9).

One of the most curious features of the Moss is the lint holes which were used for the retting (softening) of flax. The flax industry collapsed about 1850 due to the importation of cheaper linen fibres, and the lint holes are now partially covered with several species of sphagnum. Around the edges are patches of Sundew.

We finished a most enjoyable outing with a walk along the shore at Largo Bay.

C. Campbell

Visit to Dalkeith Old Wood - 24th July 1976

The visit, through the kindness of the Buccleuch Estates, was attended by an excellent turnout in perfect weather; the party joined by Mr. John Macleod, the head forester of the Dalkeith Estates, also included, we were glad to see, Mr. Gunn who had first visited the estate in 1912.

The first stop was in front of Dalkeith House where a brief history of the estate was given, going back to the 13th century and the first ownership by the de Grahams, later by the Douglas family and then by the Buccleuch line. The next stop was at the Montagu Bridge over the North Esk where in the south-west corner of the Old Wood there is a young plantation of Oak, Beech and Larch which should produce some excellent oak in the decades to come. Here too, the geology, the topography and the soils were described with particular reference to the Rivers North and South Esk and their histories from the end of the last glacial period some 10,000 years ago.

The party then crossed Steel Park to the present south boundary of the ancient oak wood where a further description was given about the probable successive native tree populations in this portion of the ancient Lothian Forest, in prehistoric times, at the advent of man, at the start of cultivation about 3000 BC and during the Roman occupation when there was the Roman Settlement at nearby Inveresk, and a Roman Camp beside the adjacent confluence of the two rivers to form the River Esk. Ownership came to be recognised some little time after the advent of the Norman families and by the 15th century supplies of oak timber were being transported to the ship building yards at Newhaven; these oaks must have been upwards of about 100 years old and therefore from seedlings of the early 1400's. From the end of the 17th century there has been a definite type of woodland management. It is, of course, intensive at the present day.

There are three different types of oak in the Old Wood, the Sessile Oak with no stalk to the acorn and indigenous to Scotland, the Pedunculate Oak with its stalked fruits and the hybrid between the two; there are about 20 per cent Sessile, 70 per cent Pedunculate and 10 per cent hybrid.

The steep banks of the North Esk were examined for natural oak seedlings of which only a few were found and even they have little chance of survival against roe deer, rabbits and hares, not to mention sheep and cattle in the wood. The party then moved up towards the meeting point of the two Esks before crossing to the bank of the South Esk. Here oak of varying ages was seen from 300 years down to those of about 100 years. The oldest consisted of five aged coppice oak all growing from the stump of a tree possibly coppiced 150 years ago. The original tree may have grown from a seedling of some 300 years ago or more.

The visit concluded with the completion of the circle of the Old Wood, a wood of such historic, biological and human interest.

W.A. Fairbairn

Outing to Union Canal at Harrison Bridge - 28th July 1976

At the start of the meeting specimens of the Pond Sponge *(Euspongilla lacustris)* were noticed. This colonial animal grows in abundance on the walls of the canal beneath the bridge. A nymph of *Nepa cinerea*, the Water Scorpion, was an unexpected find in the first sample caught by dragging a net through the pondweeds. Other much more numerous species of water bugs found were *Gerris lacustris*, a common Pond Skater; *Notonecta glauca*, one of the Greater Water Boatmen and *Corixa* spp or Lesser Water Boatmen. Caddis larvae in their protective shelters were crawling on the weed. Both the crustaceans *Asellus aquaticus*, the Water Louse, and *Gammarus pulex*, a freshwater shrimp, were found. Microscopic crustaceans, *Cladocera* spp, the water fleas, and also Cyclops spp, were scooped from among the algal growth. Flatworms, some with many eyes dotted round the anterior margin, such as *Polycelis tenuis*, and others having only two eyes, like *Dendrocoelum lacteum*, a very common whitish species, were seen gliding over the bottom of the observation dish. Molluscs seen were the bivalve *Sphaereum corneum*, an orb-shell, and the Lake Limpet *Ancylus lacustris*.

One member of our party inadvertently stood on a wasp's byke and in the ensuing few moments we beat an undignified retreat. The wasps, apart from stinging their immediate 'attacker', did not pursue us and we resumed our pond-hunting.

It was almost dusk when caddis-flies were noticed on the wing. A specimen having a green body and straw-coloured wings was obtained. It was subsequently identified as *Limnephilus flavicornis*. A tiny insect caught at about the same time was *Sisyra fuscata*. This is a Sponge-fly, the larvae of which live, feed and grow entirely in and on the sponge species that we were looking at previously.

E.M. Smith

Outing to Douglas Burn (near St Mary's Loch) - 31st July 1976

Members assembled at Selkirk for this excursion which was led by Mr. Arthur Smith and our first stop was at Philiphaugh to see the Sulphur Cinquefoil *(Potentilla recta)* growing at the roadside. This is an alien plant which is now naturalised in a few localities.

We then went to Craig Douglas and walked by the Douglas Burn to Muttonhall following the route of an old drove road to Peebles, passing on the way the site of mediaeval dwellings marked by a very old Ash tree within whose hollow trunk Goosanders have nested until the past few years.

On the river shingle the lovely orange flowers of Monkeyflower *(Mimulus cupreus)* made a splash of colour. This plant was introduced at Muttonhall and subsequently hybridised with *M. guttatus*. Along the pathway, the New Zealand Willowherb *(Epilobium nerterioides)* and in some wet places we found Hairy Stonecrop *(Sedum villosum)*, Water Forget-me-not *(Myosotis scorpioides)* and Lesser Celandine *(Ranunculus flammula)*. Also seen was Scottish Eyebright *(Euphrasia scottica)* with its white flowers and Fen Bedstraw *(Galium uliginosum)*.

Arriving at Blackhouse Peel Tower which was once the seat of an important baronetcy, we were reminded of the ballad of the Douglas Tragedy which tells how Margaret Douglas eloped with Lord William and was pursued by her father and seven brothers who were killed, one by one, by Lord William. Seven stones standing on the hillside are said to mark the places where the brothers fell. The lovers, however, did not go scot-free but died soon after.

Lord William was buried at St Marie's Kirk
Lady Margaret in Marie's Quire:
Out o' the lady's grave grew a bonny red rose,
And out o' the knight's a brier.

Near Blackhouse, where Hogg the Ettrick Shepherd was herd from 1790-1800, a light brown-coloured Mink was observed running along the river bank.

We were fortunate in having with us Mr. Andrew Buchan, whose special interest is the study of Microlepidoptera and he showed us some specimens of the caterpillars, moths etc to be found in the area.

One of our Junior Members, Andrew Liston, saw a Dark Green Fritillary *(Argynnis aglaja)* and gave us a detailed description of this butterfly which Mr. Smith had not previously recorded in the valley. The birds recorded included Whinchat, Wheatear, Red Grouse, Teal, Spotted Flycatcher and a young Cuckoo being fed by a Meadow Pipit. Mr. Smith stated that the Cuckoo was greyer in colour than the young which he usually sees in the Border country.

On the homeward journey to Edinburgh, a party of 12 Goosanders were seen on St Mary's Loch and a Sparrowhawk and two Short-eared Owls near Talla.

A. Reddin

Outing to Lauder Common - 7th August 1976
Leader - Alistair Sommerville - SWT

Although 30 people turned up at Lauder for the outing, the meeting coincided with the town's Common Riding celebrations, which thoroughly confused our whole organisation for some time. Eventually we worked out a plan and forced our way through the crowds up into the hills behind the town. But it appeared things were still not in our favour when we did eventually arrive at Lauder Common. The sky was overcast, and the air quite cold; no-one, including myself, knew the site, and from what I could see ahead of us stretched a monotonous area of exposed grassland only broken by a tiny plantation of spruce trees.

I gave a warning about how sparse the insect life might be as I demonstrated the nets, pooters and beating trays used for collecting insects. However, even as the beating tray lay on the ground, several small insects hopped on to it, and from then on we never looked back. These tiny hoppers were very abundant and although they were all sap-sucking plant bugs, there were several different species belonging to two families: the *Delphacidae* and the *Cercopidae* - the latter being the adults of the well-known Spittle bugs or Froghoppers. 'Sweeping' the grass brought to light more species of bugs, the delicate, long-legged capsid bugs *(Miridae)* and the more robust and darker lygaeid bugs. There were also several specimens of a larger predatory bug belonging to the family Nabidae, easily recognised by its stout, curved proboscis tucked under its head. Both this species and the very common grass bugs *(Stenodema)*, showed clearly their camouflage adaptation to living in grass. All of them are long, thin insects, pale brown or cream, with a generally streaked appearance - very like the fading and drying grass heads and leaves. A similar adaptation was seen in the very common creamy-white grass moths *(Pyralidae)*, which generally fly at dusk and rest during the day with their wings curled tight round their bodies to imitate a grass stem. Before long, someone caught some grasshoppers. These particular ones, *Chorthippus parallelus*, had small males and larger, short-winged females, and like the bugs, both were cryptically marked in streaked green and brown. The grasshoppers could be heard chirruping, despite the low temperature, the males attracting the females to them by sound through the dense grass. This technique is also used by many bugs, but the noise they make is too high pitched or too faint to hear in the field.

As the day warmed up slightly a greater variety of insects were turned up. We found the Antler Moth, which is very characteristic of grassy moors, along with several Large Yellow Underwing Moths. Both these moths have dull brown caterpillars which lead a semi-subterranean life, feeding on grass roots. Two more grass feeders were quite common - the Meadow Brown and Small Heath Butterflies - and we also caught other butterflies - Common Blues, Green Veined Whites, Small Tortoiseshells and several species of Carpet Moth. The larvae of all these species feed on the flowering plants which were scattered amongst the grass. In particular, the patch of thistles on a bit of disturbed ground was an oasis for many of the nectar feeding butterflies; and also for the bumble bees and the cuckoo bees which are parasitic on them; the Honey Bees, from hives near the plantation; wasps; sawflies; and several kinds of hover-flies and drone-flies. The hover-flies included the large black and white *Scaeva pyrastri*, and the much smaller orange and black double-banded *Syrphus balteus*, both well-known as migrants to Britain, and both producing larvae which specialise in feeding on greenfly - a black species of which was very common on thistle. However, the drone-flies, which were mostly *Eristalsis pertinax*, were only visiting the thistle flowers as their larvae develop in organically rich mud.

Throughout the area, Craneflies (Tipulidae) were quite common although they usually reach peak numbers in autumn. Their larvae also live in the soil, feeding on grass roots, sharing this habitat with the predacious larvae of the empid flies. Adults of these flies were quite common on the higher grass stems, waiting alertly for other smaller flies to pass, ready to jump out and catch them on the wing

Already the list of different kinds of insects was substantial, but more specialised searching under stones and in other patches of grass turned up earwigs, Ground beetles (Carabidae) and also a wide range of wolf and crab spiders. The sweep nets also produced many parasitic wasps from quite large ichneumonids that lay their eggs in caterpillars, to tiny braconids living as larvae within the bodies of greenflies.

By lunchtime, I had managed to walk only ten yards from the car, but I forced myself further towards the plantation to a hillocky area of Wild Thyme which looked a suitable picnic spot. In fact the hillocks were ant hills made by a small brown ant whose numerous workers made short work of any sandwich crumbs. Lunch was not only interrupted by the ants but also by other insects, particularly the froghoppers jumping into people's coffee.

After lunch, we looked at the trees in the plantation by beating or shaking the branches over a beating tray, and looking at anything that fell off. From most of the trees we saw lots of midges escaping as we beat, but a small selection of insects did drop into the tray. Some of these were to be found on all the trees, for example the black and white predatory bug, Anthocaris, and several species of bark louse, both adults and nymphs, close relatives of the Booklouse. These Barklice were recognisable in the field by their wings held like a ridge tent over their bodies and their relatively large heads, all of them feeding on the algae and lichens growing on the bark surface. Other insects were restricted to one tree species only, particularly noticeable was the green Phytocoris plant bug on Elm, and several different species of barklouse on Larch.

From the plantation we moved down to the burn and the mass of rushes flanking it. Here a beautiful leaf hopper, deep blue in colour, was common and sweeping produced many kinds of flies. Some of these belonged to families where the larvae is aquatic or semi-aquatic, such as the chironmid gnats, whose larvae are bloodworms, the moth flies and the smaller species of craneflies. Several species of caddis flies were found, whose larvae live under-water in cases made of leaf fragments, and a few adult stoneflies, also with aquatic larvae, which we had beaten from some of the plantation trees. Among the other species of Empids, some trypetid flies with banded wings, Sepsid flies with a black spot on either wing, and some green, metallic dolichopodid flies. The trypetid and sepsid flies use their marked wings to court the females by walking up and down the rushes waving them as they go, whereas the dolichopodid flies use their whole bodies in the same way, by rushing round and round on the mud or on broad leaves so that their metallic bodies will glisten in the sunlight. One of the dolichopids we found had white front feet which are used for close quarter displaying to the females.

From the marsh we stopped briefly at the beehive to watch bees, but found that their drinking water bowl had been colonised by lots of chironomid larvae and a couple of species of water beetle. We walked on up to the heather moor, finding a Ringlet Butterfly en route, quite a local species. Up on the heather we found several dark brown, hairy caterpillars of the Fox Moth, and one brilliant green with black stripes caterpillar of the Emperor Moth, both quite common moorland species that have males which assemble in large numbers in reaction to the females' scent when they emerge in spring. Sweeping the heather produced a few Heather Beetles, which can be a serious pest of grouse moors, but many weevils of at least two species.

I had hoped to have a look at some more deciduous trees, so after tea we moved back down to Lauder and on to Edgarhope - a broad, flat-bottomed valley, with trees along the course of the burn. On the way down the track away from the cars, we noticed the thistles on the verge were 'plastered' with the black aphid we had seen before on the Common. By getting close several people saw the aphids giving birth to their tiny young, for at that time of year the aphids do not lay eggs and can reproduce without mating. In among the aphids were a large number of the blue and black larvae of Seven Spot Ladybird eating their way through the masses of aphids, accompanied by their very familiar red and black-spotted parents. We were also lucky enough to see several parasite wasps running over the plants, tapping their antennae, searching out aphids in which to lay their eggs. One of these wasps was seen in the act of piercing an aphid with its long thin body curled forward underneath itself to bring the 'sting' to where it could see it.

Next to the thistles were some Hogweed plants, and these were covered with hundreds of a large green mirid bug, and both plants were being visited by bumble bees. Along side the bees were many orangy-brown beetles, several of them mating, these being the very common Soldier beetle *(Rhagonycha fulva)*. Several flies were also feeding on the nectar and pollen of the umbels, particularly the large black fly with yellow bases to its wings *(Mesembrina)*; the black and yellow drone-fly *(Volucella pellucidens)*, whose larvae feed on the rubbish beneath wasps nests; and the metallic green Greenbottles whose larvae can be found on carrion, wounds of sheep or in toads' nostrils, depending on the species. A bit further on we did find a dead rook, and to many people's astonishment several large black, and black and yellow beetles burst out of it when this corpse was turned over. These large *Necrophorus* beetles detect dead animals by smell very soon after death, and being powerful flyers quickly arrive at the corpse to bury it if it is small enough. Their larvae feed on the meat as long as the fly maggots have not got there first. In nearby cow pats a few larvae of a dung beetle were found, grey-white semi-transparent insects curled up like the letter 'C'. Eventually we managed to start some tree beating, and found a huge selection of creatures, again varying from tree to tree. The barklice, mirid bugs and anthocoreid bugs were common, but we had more yellow-green jumping jassid bugs, and several caterpillars, including some very well camouflaged stick or looper caterpillars, the larvae of Geometer moths. Most of the insects beaten from the trees were small, especially the tiny, black, pear-shaped *Apion* weevil, but we did find the large plant bug *Pentatoma rufipes*, which gave off a pungent spicy smell when handled, and the four-spotted ground beetle that now lives in trees *(Dromius quadrimaculatus)*.

Rather overcome by the abundance of insect life, the collecting became less enthusiastic, but nevertheless new insects turned up. From the trees we had seen many different kinds of spiders, but someone found a spider's cocoon, ie a batch of eggs wrapped up in yellow silk. Inside this particular oocoon, besides the eggs, were four grey larvae - the larvae of a parasitic wasp which between them eventually ate 90 per cent of the eggs and hatched out a few weeks later as adult wasps. Also from the trees we found more caddis flies, stoneflies and a couple of mayflies, whose larvae we found under stones in the stream. The stream also had the shortlegged, black, white and red water cricket *(Velia caprai)* skimming over the surface, looking for dead insects that had fallen in.

As we wandered around on the grassy flood plain at the end of the meeting, we saw the last of the daytime insects, and the beginning of the night-time ones. Perched on the grass stems was a large empid fly *(Empis)* and a very similar Snipe-fly *(Rhagio)*, both only active during the day. More abundant were two species of medium-sized flies, rather like very bristly houseflies with red abdomens. These were tachinid flies, waiting to spot a feeding caterpillar on the grass whereupon they would fly down and lay their eggs on its skin, the emergent maggot eating the caterpillar alive. A large swarm of parasitic wasps was seen moving up and down like a wisp of smoke, but this time they were only males waiting for a mate. Insects stayed with us right back to the cars, one of which was being used by hundreds of winged ants as a mating platform.

We made our way home with dozens of names, life histories and insects buzzing round inside our heads, and the first of the moths, a tortrix and a wainscot buzzing round outside.

A. Sommerville

Excursion to Cove and Siccar Point - 14th August 1976
Leader - Dr. Charles Waterston

The purpose of this excursion was to examine the rocks outcropping on the shore between Cove and Siccar Point. Cove harbour is approached through a man-made tunnel cut in the Cove Harbour Sandstone. Here in the vicinity of Cove harbour, we examined the highly fossiliferous Cove Marine Bands. The upper marine band consists of calcareous shales and impure limestone yielding fossils of the brachiopod, *Punctospirifer scabricosta*, a bivalve *Aviculopecten* sp and a cephalopod of the group *Orthoceratids*. The lower marine band, a calcareous sandstone full of fragments of fossils including those of the brachiopods *Compositae* sp, *Punctospirifer* *redesdalensis*, *P. scabricosta*; and bivalves belonging to the nuculid and sanguimoltid groups. These bands are the oldest fully marine horizons in the Scottish Carboniferous. Leaving Cove harbour behind we made our way eastward passing the Horse Roads Sandstone and the prominent point formed by the Kip Carle Sandstone. The later sandstone displays curious oval-shaped concretions similar in appearance to military helmets. Continuing eastwards, the grey sandstones, which are taken to be the base of the Carboniferous, grade downwards through mottled, grey and red sandstones into red sandstone. The rare scales of the extinct fish, *Holotychius nobilissimus*, found in the red sandstone indicates that we had passed in time through the base of the Carboniferous and into the top of the Upper Old Red Sandstone. A short scramble over the rocky shore brought us to picturesque Pease Bay.

Climbing uphill from Pease Bay we left the road and walked along a fine example of a glacial drainage channel to Old Cambus quarry and over the fields to Siccar Point and Hutton's Unconformity - a hallowed spot for geologists. It was at this now world famous spot that geologist James Hutton first grasped the true significance of the structure displayed at Siccar Point. Here we saw the structure as first seen by Hutton in the early 19th century with its uneven basement of vertical greywackes and shales of Silurian age overlain unconformably with horizontal breccia and sandstone of Upper Old Red Sandstone Age. The breccia is composed of greywacke fragments. At this point in the excursion, Dr. Waterston read to us from John Playfair's paper of 1805 describing the discovery. This paper tells how James Hutton, accompanied by Sir James Hall and John Playfair, sailed from Dunglass to Siccar Point. Perhaps a passage from Playfair's paper may be said to bridge the time gap between Hutton's visit in 1805 and our visit with Dr. Waterston in 1976:

> "The mind seemed to grow giddy by looking so far into the abyss of time; and while we listened with earnestness and admiration to the philosopher who was now unfolding to us the order and series of these wonderful events, we became sensible how much farther reason may sometimes go than imagination can venture to follow. As for the rest, we were truly fortunate in the course we had pursued in this excursion; a great number of other curious and important facts presented themselves, and we returned, having collected in one day, more ample materials for future speculation, than have sometimes resulted from years of diligent and laborious research."

G. Bell

Visit to Loch Leven - 20th August 1976

The first part of the visit before lunch was to the RSPB Centre and observation post at Vane Farm. Points of ornithological interest were explained by the warden, Mr. Peter Rowath.

After lunch, the boat house and laboratory of the Nature Conservancy Council were visited. Here Mr. K. East, of the Institute of Terrestrial Ecology, showed and explained the use of sampling equipment used for studying the bottom fauna (worms, insect larvae, crustacea and molluscs) of the loch.

Members saw that the basic method of sampling the bottom living animals was to take samples of the substrate and extract the animals. Samples were taken with a perspex tube 7 cm in diameter. The apparatus surrounding the tube depended on the substrate to be sampled. Thus for soft mud the complete apparatus is called a Jenkin sampler and was lowered on a rope - sinking into the mud by virtue of its weight and taking a sample in the tube. To sample sand the complete apparatus is a Maitland corer, and this was pushed into the firm sand on the end of a rigid pole. The scale of sampling at Loch Leven to obtain meaningful results was emphasised.

Members also saw methods of obtaining adult non-biting midges (Chironomidae) which are important at Loch Leven, either by simply floating a cage on the surface of the loch to catch the emerging chironomids, or by taking a large sample of the bottom into shallow water (or into the laboratory) and fixing a cage over this to catch emerging insects.

A simple method of extracting animals from mud by sieving was demonstrated and some of the leeches, insects, crustacea and mollusca obtained were examined with a microscope. Methods of identification of the species found were briefly explained.

A few words about the average numbers of some benthic invertebrates per square metre per year, and their productivity in terms of dry weight per metre square per year (about 34 g/m^2 for all the Chironomidae of the mud area in 1971-72), ended the visit.

K. East

Week-end in Northumberland - *Saturday, 18th September 1976*

On a calm, sunny autumn day more than 40 members of the Society, led by Mr. Sternie from Newcastle, set off from the car park at Steel Rigg and climbed the steep steps known as 'Cat Stairs' on to Peel Crags to walk eastwards along Hadrian's Wall to Housesteads

This spectacular three-and-a-half mile stretch of Roman Wall is owned by the National Trust and runs along the edge of the Whin Sill Crags high above Crag, Greenlee and Broomlee Loughs. Standing on the top of the cliffs we could look to the north over a countryside, probably little changed since Roman soldiers patrolled, of scattered farms, heather moors and forests, and to the south into the Tyne valley.

As we walked along the wall I think that we all felt some excitement as our minds winged back in time nearly 2000 years and although the day was glorious we could well imagine a bleak winter in Roman times with bitter winds sweeping across this exposed frontier.

Hadrian's Wall snakes over the country from Tyne to Solway. In AD127 it defined the northernmost frontier of the Roman Empire. When complete, it stood 15 feet high and was between eight and ten feet wide and surmounted all obstacles, including the edge of Peel Crags. Three Roman legions built the wall with the help of auxiliary troops. Each legion was responsible for about five miles of the wall's construction at a time, the centuries building 45-yard stretches. We saw that there were slight variations in width on the south side where we were walking and Mr. Sternie pointed out that this was where the different centuries' work met. Carefully cut, squared-up stones were used for the wall facing and many of these were robbed at a later date and used by local people to build churches, farm houses and field walls. Seventeen huge forts, built to a standard pattern were constructed at intervals along the length of the wall and in between were 'mile castles' and signal towers.

As we proceeded along the edge of the sheer cliffs, we reached the Mile-Castle 39. This housed cavalry in Roman times but today only a weasel ran through the gateway of small stones and over the crumbling walls as we approached.

Further along the wall, we came to a gap which is the site of Mile-Castle 37 and so on to Housestead Fort through the West Gate. This almost completely excavated five-acre frontier post could accommodate 1000 infantrymen and in Roman times the steep south-facing slope was covered with buildings - houses for the soldiers' families, shops of many craftsmen, inns and taverns. A few buildings near the South Gate have been excavated and one, known at 'Murder House', was found to have two skeletons buried beneath the floor and a knife blade was sticking into the ribs of one of them.

We were shown the famous latrine block where up to 20 men at a time could sit and chat as there were no partitions between the seats which lay above deep sewers. A narrow channel round a centre platform held water in which the soldiers could wash out their sponges which the Romans used instead of toilet paper.

In the centre of the fort was the Headquarters building and, north of that, the granaries. The stone upon which a wooden floor once rested, can still be seen.

Leaving Housesteads Fort we turned westward again and walked back across the heather, bracken and bog to Greenlee Lough where we stopped for tea and watched the yachts sailing on the water. A ceildh in the evening rounded off a very interesting day.

D.M. Howarth

Sunday, 19th September

The morning was spent visiting the remains of the Civilian Settlement and Roman Fort at Vindolanda, built to protect the Stanegate which was then the Northern frontier line. The adjacent museum was of great interest and contained various items of Natural History, including the fronds of Bracken *(Pteridium aquilinum)* which was harvested by the Romans for use as floor coverings etc. Also, remains of Puff Ball *(Bovista nigrescens)* have been found on the site. As the extent of the deposit has still to be investigated, there is a speculation amongst scientists as to their use. Although various fungi were eaten in Roman times, it is known that in the past they have also been used as tinder, to stop bleeding in minor abrasions and also in beekeeping by blowing spores into the hives.

The afternoon was spent in the National Trust property of Allen Banks and we walked by the West Allen River through a mixed deciduous wood. While some members went bird spotting and saw Marsh, Coal and Long-tailed Tits, the remainder took part in a Fungi Foray. Although ground conditions were dry, over 50 species were identified, including the following.

False Chanterelle *(Hygrophoropsis aurantiaca)*; *Lycoperdon pyriforme* - the only one of this genus to grow on wood; Horse Hair fungus *(Marasmius androsaceus)*; *Mycena galopus*, whose stipe yields white latex when broken; *Serpula lacrymans*, which causes dry rot; *Stereum hirsutum*, known at 'Hairy Skin'. A fuller list of fungi found as well as the shrubs and herbaceous plants seen in the deciduous wood may be obtained from the Records Secretary.

Other interesting records included Midge larvae on shale, Shieldbugs, Spangle Galls on oak leaves and a Slow Worm which had shed its tail. The gorge had been cut by the river through the Carboniferous rocks and on one of the stony beaches fossil Cockleshells *(Brachiopod orthis)* were found. Rosemary Harper explained that these were aged 200 million years-plus, and that the cockles at that time lay on their backs to feed, the valve on top opening like a flap. What looked like a small black stone was identified as fossil fish droppings.

A. Reddin

Foot warming

We keep our greenhouse just sufficiently heated in winter to avoid frost damage to plants. I have been amused to see our resident blackbirds, which nest in a *Cupressus lawsoniana* close by, using this as a fringe benefit by perching on the roof ridge of the greenhouse for long periods and drinking from the drainage gutter which runs along the edge.

I. Maclean

No entry

As the public becomes increasingly aware of its environment and walkways are set up so that people can enjoy footpaths free from the pollution of towns, so other problems rear their heads. In 1976, for example, it was noticeable that many more motor cycles were seen on the roads. Unfortunately, quite a few owners took the anti-social step of entering the last bastion of the pedestrian, namely the footpath.

In Corstorphine Hill Park, for example, it has become a problem and Park Patrols are constantly watching for offenders. The Patrolmen will welcome reports of Licence numbers as well as information about persons using fire-arms of any sort.

On private land, too, the problem gathered momentum and in the Barnton section of the River Almond footpath, the Rosebery Estates are currently erecting locked field gates so that access is limited to pedestrians and hopefully will soon become less dangerous, quieter and less liable to be churned by wheels.

J.H.W. Young

STOP PRESS

On 3rd December 1976, a hen Blackcap was seen foraging amongst rose bushes in snow-covered gardens only a few hundred yards, as the crow flies, from the garden described in the article on 'A Wintering Blackcap in Edinburgh' in the 1975 Journal - see page 11.

M.W.

Butterflies recorded at Milkhall Pond Reserve (SWT) during 1976: Meadow Brown, Small White, Small Tortoiseshell, Green-veined White, Small Copper, Red Admiral, Large White.

C.P.R.

METRICATION

Imperial *or* metric units of measurement - in a few articles both - have been used in contributions in this Journal. In any future Journal it is planned to use metric measures followed in brackets by the corresponding imperial ones.

BRISC

On 30th April - 1st May there is to be a Biological Recording in Scotland Week End at Heriot Watt University, Riccarton.

For details, members should apply to Mr. C.P.R. Rawcliffe.

THANKS

I would like to express my warm thanks to all who subscribed to my presentation. Several gifts of my own choice, including a radio, lenses for close-up photography, and a recently published book 'The Atlas of British Breeding Birds', were presented to me on behalf of the Society by Mr. P.W.G. Gunn, Hon President, at the December meeting.

Nora F. Henderson

OBITUARY

It is with deep regret that we record the death of Ian F. Sime in December 1976. An enthusiastic geologist and long an active member of the Society, he led many outings and stimulated great interest in this field. His friends knew him as shrewd, kindly and humorous, a man of constantly inquiring mind and wide ranging interests. He was a keen conservationist and devoted much time and energy to the work of the Lothians Branch of the SWT. He will be long remembered, not least by the many young people whom he was always ready to help and encourage.

E.H.